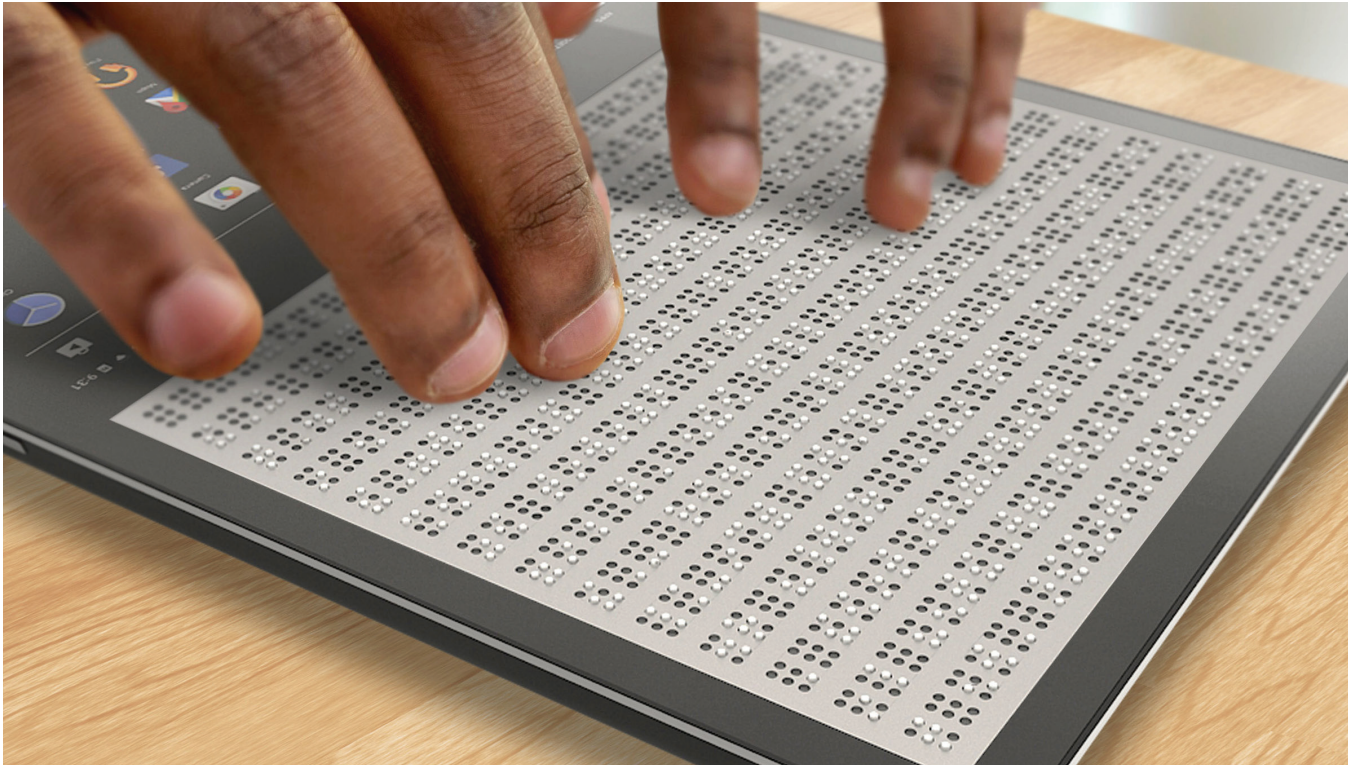# A NEEDS REPORT ON ACCESSIBLE TECHNOLOGY

SUMMARY REPORT

Provided to the Accessible Technology Program (AT), Department of Innovation, Science and Economic Development (ISED) by the Canadian Council of the Blind

April 9, 2019

THOUGHT PROCESS OF CANADIANS WITH SEEING DISABILITIES:

" Having **accessible technology** for all Canadians is wonderful.

Having **assistive technology** is great.

Adaptive technology, when accessible, can also work.

Having **accessible assistive technology** is currently **'pie in the sky'** for the vast majority with sight loss due to the high costs of plans and equipment as well as one's ability to access helpful and available equipment and technological 'know-how.' "

– Louise Gillis
National President, Canadian Council of the Blind

April, 2019

The final report will be accessible to those with sight loss.

FOREWORD

In my position as National President of the Canadian Council of the Blind (CCB), I am tasked and do my best to advocate responsibly for those with sight loss and to address issues that are important to the seeing disabilities community. Whether it's an awareness initiative or advocating governments for improved access and funding, the CCB identifies and addresses the specific barriers and obstacles that confront those with vision loss living in Canada. Our original mission, and role, as the "Voice of the Blind™", outlined in 1944 – to promote the well-being of people with vision loss through advocacy, education, profitable employment, and social association – continues to this day.

To identify the issues affecting our community, we listen to our members from coast to coast, staying on top of what the 'hot topics' are and working with local CCB chapters across Canada in order to create effective action plans that address these issues.

One theme that has emerged from all CCB chapters is that of assistive technology and access to it. We are living in the 'technology age' and technology is rapidly evolving as new, innovative, and formerly-unthinkable devices that have the ability to dramatically change the lives of those with seeing disabilities are being developed at a steady rate.

Having accessible technology available for all Canadians is wonderful. Having assistive technology is great. Adaptive technology, when accessible, can also work. Having accessible, assistive technology is currently 'pie in the sky' for the vast majority with sight loss due to the high costs of plans and equipment, as well as one's ability to access helpful and available equipment and technological 'know-how.' It is quite unacceptable that accessibility programs, technology costs, and training support mechanisms vary widely depending on where one lives in Canada.

Canadians with sight loss are being left behind. This hinders education, socialization, economic health, independence, and self-confidence. It can also lead to isolation, which often spirals into depression and mental illness. All of these negative effects come at a great cost to society.

Technology needs to be available – accessible, assistive, and adaptable – for all Canadians. By addressing this issue and improving access to assistive technology, we can improve employment rates, education levels, and quality of life for so many.

The impact on Canadian society and the economy would be overwhelmingly positive. This is a 'win-win' situation for those with vision loss, other people with disabilities, and Canadian society at large.

We can contribute to this change in society and help create a better Canada. People with disabilities, stakeholders, the medical community, educators, training and rehabilitation specialists, the technology industry, and all levels of government should work together effectively to create a plan and make a positive impact.

This, the CCB's latest initiative, A Needs Report on Accessible Technology, including our panel discussion and survey with the resulting powerful and thought-provoking findings, is a good start.

I would be remiss in not thanking those who assisted in this report; and that should start with the 453 respondents who participated in the survey, providing a strong 30% response rate. The CCB called on 26 different people in assembling the final document. We are extremely proud that 50% of those individuals contributing had seeing disabilities. This is truly a case of "measuring one by their capabilities not their disabilities." Again, thanks to all equally, whether with sight loss or sighted. We matter.

Louise Gillis

Louise Gillis
National President
Canadian Council of the Blind

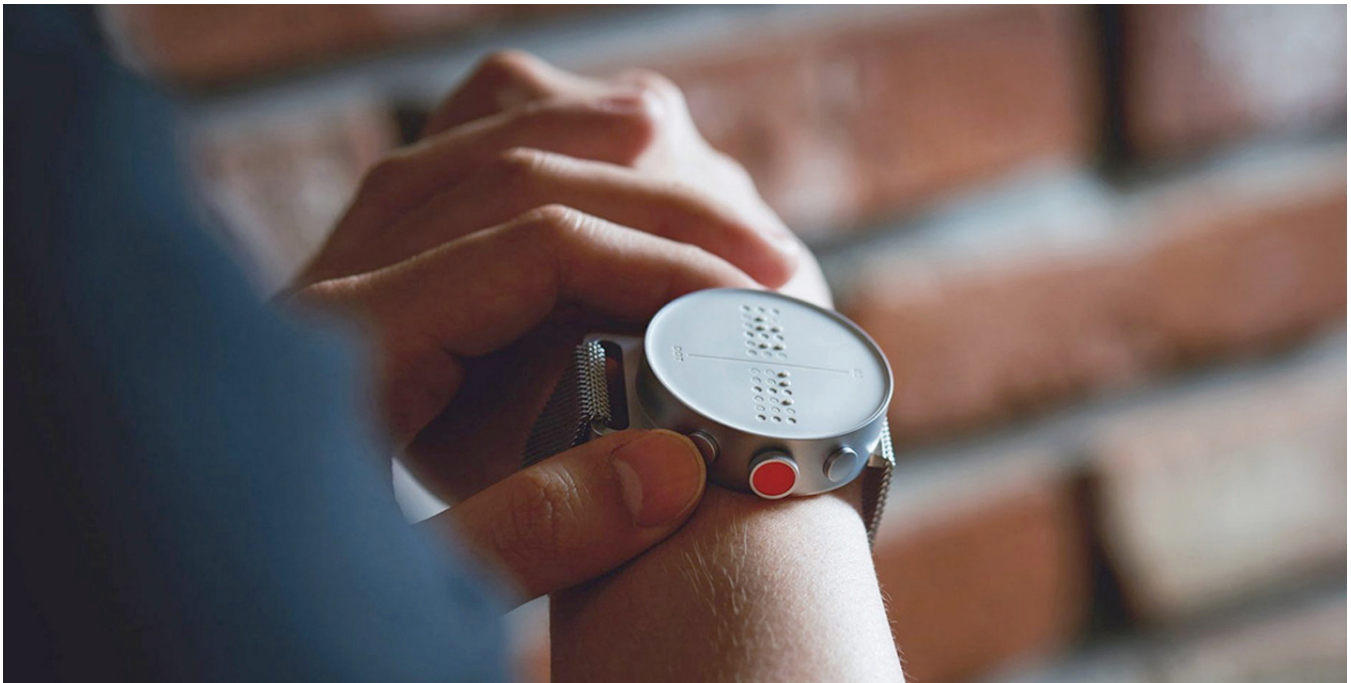# TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Task

Through the Accessible Technology Program (AT), Canada's Minister of Innovation, Science (ISED) and Economic Development has tasked the CCB with identifying the needs of Canadians with sight loss, specifically in the areas of accessibility and assistive and adaptive technology, in order to help them achieve gainful employment. We accomplished this through February's 'Experience' Expo Assistive Technology Forum and the ensuing Accessibility and Assistive Technology Survey, which is discussed more fully in Part 2 of this report.

The goal was to promote and increase awareness of the AT program while at the same time seeking to better understand the issues faced by the sight loss community and to gauge how the AT program can best assist in addressing them.

The Premise

The Canadian blind and low-vision communities have been left behind. During this process, individuals with vision disabilities have clearly outlined where the

narrative for accessible and assistive technologies needs to go and they look forward to continue working with governments to drive change that positively impacts their quality of life.

Recommendations

In order to maintain the trajectory of the shift from reliance on only post-market assistive technology to the inclusion of more mainstream technology that is accessible out-of-the-box, robust and meaningful legislation is required to ensure corporations and governments create an environment for equal access across the board. The CCB recommends the following action (recommendations below are expanded upon in further detail on page 29):

- Promoting Education in the Area of Accessible and Assistive Technology and Advancing its Dissemination

- Incentivizing Recruitment and Hiring

- Supporting the Not-for-Profit Sector

- Provincial-Federal Collaboration

- Improving Reliability of Data on Persons with Sight Loss

- Future Review and Analysis

Defining Accessible Technologies

Accessible technology: Mainstream technology that is accessible to the full range of users from the start. These technologies provide a range of access choices so that special add-ons are not needed. The full range of access choices are integrated and remain interoperable.

Assistive technology: Specialized technologies intended for people with disabilities that provide alternative access features not provided by mainstream technologies. These technologies may need to interoperate with mainstream technologies.

Accessible assistive technology: Assistive technology that is financially accessible and ubiquitously available, with easily-available maintenance, set-up, and training.

Adaptable technologies: They are inclusive. These are technologies that are both integrated and mainstream, and which adapt to the individual responding to the specific needs of each user.

Where to Start

Initially, our thoughts were that we were simply dealing with access to mainstream and specialized assistive technologies. This was not the case. We quickly came to understand that simply giving someone with sight loss a job and access to various technologies doesn't solve the problem, but creates new ones.

Our findings tell us that it's not just jobs and technology but a series of essential supports that are needed to meet the goals of the program. The question should be: what are the considerations, concerns, barriers, and burdens we need to address to assist someone in participating fully in education and employment? Technology cannot address the range of barriers and constraints. The issues faced by persons with disabilities are multiple and complexly entangled.

A high-quality education requires not only learning tools, but also accessible transportation, accessible environments, accessible and affordable technology, accessible content and communication, as well as training. All have associated costs, and economic assistance is essential to a community that is economically depressed. To a majority in the sight loss community, the cost of technology is by itself prohibitive. It can cost up to ten times as much to get online for a student who is blind compared to a student without a disability. Despite the high cost of assistive technology, access is usually less reliable.

Employment requirements are similar, more concentrated, and often complicated by what the cost is to the employer. More often than not, this is perceived as a prohibitive non-starter.

The added cognitive, physical, and time burden borne by persons with sight loss is considerable. What we are asking those with sight loss to undertake to join today's workforce is for all intents and purposes equivalent to a second job, just in terms of maintaining a level playing field with peers and colleagues without disabilities.

Dealing with High Unemployment

Our survey found that 33% of respondents who were eligible for labour force participation were unemployed, and that participation in the workforce by those with sight loss was 21.5% lower than those sighted or without disabilities.

According to the Treasury Board Secretariat's Employment Equity in the Public Service of Canada 2015-2016 report, the recruitment of people with disabilities to the federal public service decreased from 3.5% to 3.3% (workforce availability was 4.4%). At the same time, the representation of people with disabilities under the age of 35 was lower than workforce availability, and the percentage of separations for people with disabilities was higher than for those without disabilities.

We believe it's quite possible that without a program designed around intervention, getting large numbers of people with disabilities into the workforce might not be possible. One number escaping most, if not all research is the percentage of people with disabilities, not able to work. We recommend that the government seriously consider/investigate an affirmative action program to level the playing field between people with disabilities and those without.

Addressing the Challenges

To address these challenges, as part of its strategy as Canada's largest employer, the Government of Canada has committed, through the Treasury Board Secretariat's Public Service Accessibility Program, to foster a diverse and inclusive workforce by hiring 5,000 people with disabilities (1,000 each year) over the next five years.

We believe Canadians with seeing disabilities should share in those jobs. Canadians from the sight loss community need full accessibility to technology and digital content. Ensuring that Canadians with sight loss have access to information, training, and communication tools and content needs to be embedded in all processes. This includes planning, considering affordability/ cost factors, designing, developing, monitoring, evaluating, implementing, and refining.

Technologies and content that are 'born accessible' (designed to be accessible from the start, without the need for special assistive technologies) accompanied by improved access to assistive technology would have a cascade of positive impacts – socially, emotionally, and economically.

Vehicles for Change

The Accessible Technology and the Public Service Accessibility Programs are outstanding government initiatives in support of people with disabilities, but they can't solve the problems alone. As vehicles for change, they need support – to be 'fully-loaded,' so to speak – if they are to achieve their intended goals. Once enacted into law, relevant amendments to Bill C-81, the Accessible Canada Act, can be part of that solution.

The AT program should be extended beyond its present term and be topped up with additional dollars, equal to its initial level of funding. The program has a positive impact on those with seeing disabilities and the technology sector.

Its mandate should be re-evaluated in the context of the 2017 Canadian Survey on Disability with unemployment goals being adjusted accordingly. The 2017 findings showed an over 100% increase in people with seeing disabilities, and this number is expected to double again over the next decade. This calls for a re-evaluation of the government's goal of diminishing unemployment numbers by 4% amongst people with disabilities during the program's present term.

Training in Technology Is a Necessity

It serves no value to give someone who is blind or has vision loss technology if it is not supported with a comprehensive training program. At this time, we are aware of but one program in Canada that offers a program that meets the specific needs of blind and visually-impaired adults. Vancouver Community College (VCC) is leading the way in training people with sight loss in the use of today's technology. The program can be studied on a part-time or full-time basis, and includes courses on braille, computers and computer skills (including Microsoft Office applications, keyboarding, database management, and internet training using speech, braille, and large print access), math and English upgrading, office administration, and more.

It is recommended that the government investigate the potential of implementing a program that mirrors VCC's program, which in turn would support the Accessible Technology and Public Service Accessibility Programs.

It is our position that programs similar to this one are necessary in all regions of Canada, and any provincial Assistive Devices Program (ADP) aimed at providing the necessary funding to purchase assistive/accessible technology for use by blind and partially-sighted workers/students must be accompanied by sufficient high-quality training to ensure a reasonable chance at success.

Stakeholder Technology Training Programs Should Be Considered AT Resources

The CCB's Get together with Technology (GTT) program as well as the Foundation Fighting Blindness' Young Leader program should be considered as potential partners for the Accessible Technology Program. In fact, the CCB's GTT program has the ability to test and critique new technology on a national scale. Both programs are training people with seeing disabilities in the use of accessible assistive technology. Both also offer the training that is necessary for those with sight loss to become productive members of Canada's workforce.

The Elephant in the Room

Finally, there's an elephant in the room that cannot be dismissed. The Foundation Fighting Blindness' President Doug Earle recently stated, "Today 5.5 million Canadians have eye conditions that put them at serious risk of vision loss and blindness. Conditions like age-related macular degeneration, diabetic retinopathy, and glaucoma are on the rise: studies show that by age 40, the number of people living with vision loss doubles every decade. Furthermore, inherited retinal diseases like retinitis pigmentosa, Usher's disease, and Stargardt's disease are impacting individuals and families across the country. Given Canada's aging population, this presents a real vision crisis – blindness and vision loss with education, regular eye examinations through programs designed for early detection, and timely treatment are preventable. With this in mind, we are hopeful that scientific breakthroughs are poised to revolutionize vision health care."

Canada faces an emerging vision health crisis and it needs to be addressed. In 2017, the Canadian Survey on Disability identified over 1.5 million Canadians living with a seeing disability. It's projected the number of people living with a visual impairment will double by 2031.

The Canadian Council of the Blind, buoyed by the findings in this Needs Report, strongly supports ISED's Accessible Technology Program and urges the government to consider the report's recommendations and to open a wide discussion with relevant stakeholders on its content. Together we can change what it means to be blind.

Respectfully submitted by,

The Canadian Council of the Blind
April 9, 2019

2019 'EXPERIENCE' EXPO PANEL DISCUSSION: ASSISTIVE TECHNOLOGY FORUM

Overview

On Saturday, February 2, 2019, the Canadian Council of the Blind (CCB) Toronto Visionaries Chapter hosted the 2019 White Cane Week 'Experience' Expo, an annual event for Toronto's blind and low-vision communities featuring nearly 50 exhibitors, contests and giveaways, and plenty of community-building. The event was a fantastic success on every level, and had over 400 attendees. This year, the Expo also featured its first-ever Assistive Technology Forum, an interactive panel discussion on accessible and assistive technology.

The hour-and-a-half panel discussion was well-attended with over 90 audience members, proving access to technology to be a popular and engaging topic.

The featured panelists were Louise Gillis, National President of the CCB; Chelsea Mohler, Assistive Technology Educator and Community Engagement Specialist at BALANCE for Blind Adults; Albert Ruel, the CCB's Get Together with Technology (GTT) Western Canada Program Coordinator; and Dr. Jutta Treviranus, the Director and Founder of the Inclusive Design Research Centre (IDRC) and the Inclusive Design Institute (IDI). Moderated by Michael Baillargeon, the CCB's Senior Advisor of Government Relations and Special Projects, the forum provided different

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perspectives on access to technologies to generate a multi-faceted discussion on this important and rapidly-evolving topic. The interactive discussion centered on how technology affects those with vision loss at home, in the workplace, and while job searching.

Key questions about where the rapid pace of technology is taking us, where it needs to be going, and where and how exactly people with sight loss can benefit from quality-of-life enhancements were drivers of the informative and thought-provoking session.

The panel discussion, live streamed on YouTube, was a candid and informative event that

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Your chance to participate in a panel discussion dedicated to bridging technology for Canadians who are blind or partially sighted and designed to achieve inclusive, progressive accessibility. Followed by a question and answer session.
Panel will include **Louise Gillis**, National President, Canadian Council of the Blind, **Chelsea Mohler**, M.SC., Community Engagement Specialist at BALANCE for Blind Adults, **Professor Jutta Treviranus**, Director of the Inclusive Design Research Centre at OCAD University and **Albert A. Ruel**, CCB's Get Together with Technology (GTT) Program Coordinator, Western Canada.
Space is limited to the first 75 reservations.
Please direct your RSVP to CCB Toronto Visionaries Voice Mail Line:
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tapped into real-time concerns and burning issues, and concluded only after numerous questions from a fully-participating audience. A central theme emerged through the moderated discussion: the vision loss community wants to drive change and enhance the current framework in which assistive technologies are accessed, and standard technologies and content needed to work, study, and participate in our community are made accessible.

Dialogue and information gleaned from the panel discussion and interviews with over a dozen Expo technology exhibitors were the primary sources used in creating the questions in the follow-up Accessibility and Assistive Technology Survey.

The Senior Program Officer from ISED's Accessible Technology Program met with technology exhibitors, building awareness and providing information on the government's Accessible Technology initiative. Both the CCB and the government's representative gave the exhibitors the undertaking of following up with the survey's results.

Theme #1: Understanding Accessible Technology and the Current Canadian Landscape

There's no doubt that technological innovation is moving at an accelerated pace, breaking boundaries every day and dramatically changing the way that people live and work. Innovations, by design, are developed to reach mass audiences with a perception of catering to the 'greater good.' Unfortunately, that leaves individuals with various disabilities at a major and unfair disadvantage – these Canadians miss out and don't have the same opportunities as others to actualize their full potential, whether at home or in the workforce. It's just not a level playing field.

Mainstream technology is a double-edge sword – it has the ability to be a major barrier, but also life-changing. Many Canadians experience an increase in the accessibility of mainstream technology that supports work, leisure, and volunteer pursuits, creating an environment where they are less reliant on after-market assistive technology. When it comes to access to information, technology has also made a major impact on those with vision disabilities. The way someone with low or no vision accesses information today is incredibly different from 20 years ago, and this is a good thing. Today low-vision or blind Canadians can participate by reading the daily newspaper or engaging via social media to stay up-to-date.

Assistive technologies are no longer only for those with disabilities – the use of voice commands like Siri and Google Home is changing the norm for most Canadians. You can imagine what these voice-operated technologies can do for someone with no vision.

The challenge today is that emerging technologies are designed for the 'typical' user, leaving many people with disabilities without access. With digital systems, assistive technologies bridge the gap between the needs of people with disabilities and the mainstream technologies. To work, assistive technologies must remain interoperable with frequently-updated mainstream technologies.

Often people with disabilities invest money, time, and energy into acquiring and learning to use these specialized technologies only to find they are no longer compatible with the mainstream technologies or are no longer available. The specialized assistive technology industry is very precarious. The conversation about assistive technology must go beyond specialized technologies that are made for people with disabilities – we need to think about the whole technology ecosystem.

People with disabilities are in the pursuit of workplace inclusion through accessible and assistive technology. At the 34th CSUN Assistive Technology Conference held in Anaheim, California in March of 2019, the notion that the world is serving the needs of those with disabilities was shown to be slowly shifting from reliance on only post-market assistive technology to the inclusion of more mainstream technology that is accessible out-of-the-box.
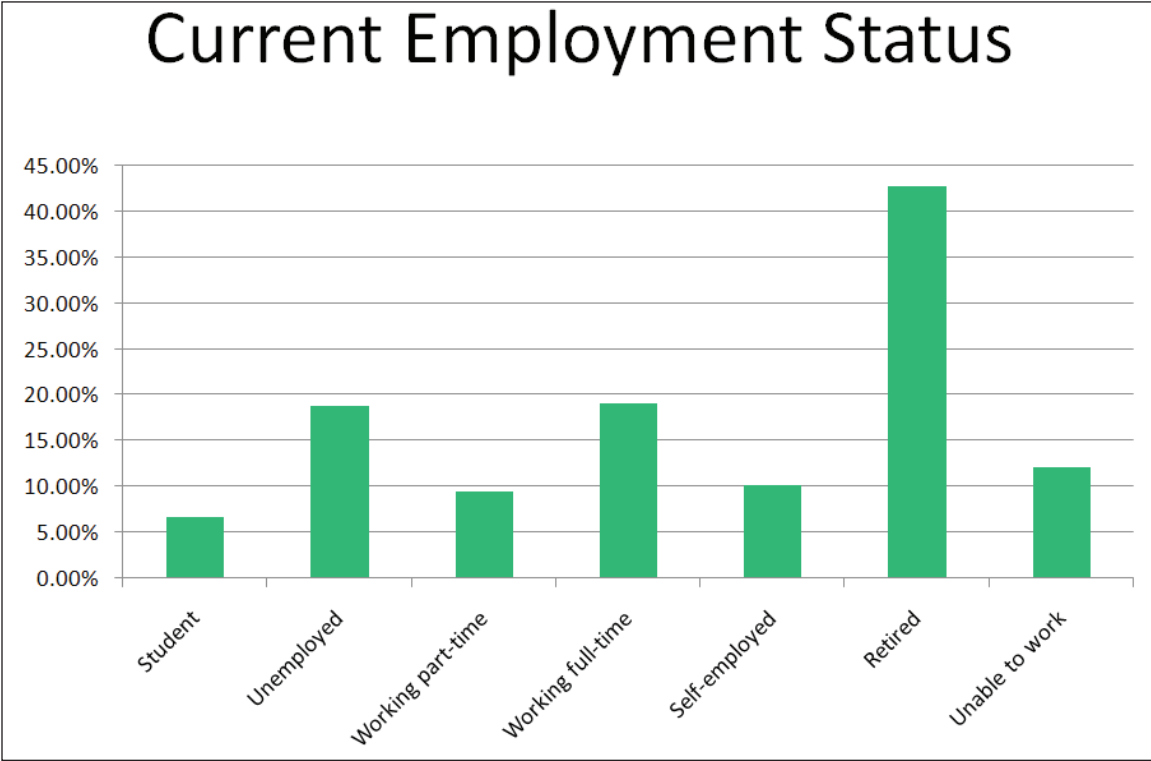
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443/453 Responding

On the CCB's Accessibility and Assistive Technology Survey, there were 443 respondents to the survey question on employment status and the results indicated a 19% unemployment rate. This result is misleading, however, in that it includes survey respondents who are not considered eligible for labour force participation, such as retirees, individuals who are unable to work, and students. This analysis also assumes that the respondents who provided information about their employment status did not choose more than one response, e.g. that respondents who indicated that they are 'unemployed' did not also choose 'retiree' or 'student.'

Of the 57.5% (225 respondents) who are in the labour force, 33% of those responding indicated they are unemployed (that's over four times higher than Canada's present 8% unemployment rate), 33% are working full-time, 16% are working part-time, and 18% are self-employed. The labour force participation rate of 57.5% includes respondents who are of working age, able to work, and are employed full-time, part-time, self-employed, or are eligible to work but are currently unemployed. In contrast, the participation rate of Canadians without disabilities in the work force is 79%, a 21.5% advantage over Canadians with seeing disabilities.

While there has been an increase in the number of students with a disability – including sight disabilities – attending post-secondary institutions in the past decade, the percentage of students with a disability who are likely to obtain meaningful employment upon graduation from post-secondary school is lower than that of their able-bodied peers. One of the main barriers to employment faced by recent graduates with visual disabilities is technological barriers.

There is a lack of availability of accessible and assistive systems, software, devices, and technology that includes all employees for Canadians with low vision or blindness in today's workplaces. Employers are also often not well-versed in accessible and assistive technology and how this can optimize their workforce.

Furthermore, employers, career educators, faculty, and accommodation specialists often do not have access to mentors with visual disabilities that they may themselves learn from, and so are frequently unaware of the full range of possibilities open to persons with visual disabilities and unable to advise effectively as a result. This challenge is especially evident in small- and medium-sized businesses, where employers may not have interacted with qualified employees with visual disabilities previously, as well as in 'nontraditional' careers – i.e., career paths that students with visual disabilities are not expected to pursue (e.g. STEM – science, technology, engineering, and mathematics – as well as some health care sectors).

The consequences of this lack of awareness can be far-reaching, particularly in light of current Canadian workforce demographics. A significant amount of 'untapped potential' of qualified individuals may be excluded from hiring, job retention, and promotion consideration as a result of misperceptions and lack of knowledge. Additionally, the diversity of the workforce suffers, at a time when smaller workforces are being called upon to support an aging population in Canada.

The biggest barrier to access to assistive and accessible technology is cost. The prohibitive cost of this technology is an ongoing issue for the sight loss community and many are not able to acquire the tools and technology they need to be set up for success in the workforce.

In the current landscape, data usage and bandwidth are also major issues for those in the blind and low-vision communities. Almost all technology being used by Canadians requires access to Wi-Fi or cellular coverage to function. Assistive technologies that are specialized (i.e. travel, maps, reading, and object identification devices) require much more data through cellular providers to operate and this comes at a high cost, varying considerably from province to province.

Ensuring assistive technologies are up-to-date is another ongoing concern. It has become part of the regular routine for most Canadians to update the software for

their devices to new and enhanced operating systems, but this creates havoc for those who rely on assistive technology. Its specialized technology must remain interoperable, and if it is not also updated it becomes incompatible, leaving users in a perpetual predicament.

The Foundation Fighting Blindness (FFB) reports that it has heard repeatedly through its education programs of the significant challenges of young people living with blindness to find meaningful employment. Since 2015, the FFB has been operating a two-day class, through their National Young Leaders Program, designed to provide young people with vision loss with the resources and networks necessary to find rewarding careers.

Think about the implications for a low- or no-vision Canadian student who relies on assistive technology at school for course materials and more. This type of situation often leaves the student stranded and struggling to find their way forward at school. Graduation and employment rates clearly illustrate this challenge for the blind and low-vision communities.

The Canadian workforce is losing experienced workers at the height of their careers. As a country we must act now to benefit from this work experience and accommodate employees with visual impairment needs, to capture this expertise in our workplaces.

Accessible assistive technologies were identified by the program's participants as critical to their success in navigating a complex and competitive digital landscape in order to successfully market themselves and locate career opportunities. Individuals who excel in this context are typically tech-savvy and have had opportunities to engage with relevant technologies, while many of those who struggle have had limited access to similar tools or fewer opportunities to engage with them.

Training is another obstacle for many Canadians with low vision or blindness, significantly limiting the use of assistive and accessible technology. All too often it isn't the technology holding the person back, but the skill level deficiencies that are creating the barriers.

Some provinces offer funding for the purchase of assistive devices, but none provides sufficient training in the use of these devices or software to ensure success in the workplace or post-secondary pursuits. In fact, the amount of training time rarely matches that which is recommended by assessors and trainers. High-priced devices seem to be far easier for program staff to rationalize and fund than are the training hours needed to help blind and visually-impaired people gain a useful level of proficiency.

The blind and visually-impaired communities are largely dependent on the charitable model for training, which often leaves them at the mercy of donors. People who are blind and visually-impaired should not have to be reliant on the generosity of donors rather than the publicly-funded education sector that others have complete access to.

The Vancouver Community College (VCC) offers a program and courses to meet the specific needs of blind and visually-impaired adults. VCC's Visually Impaired Adult Program, funded provincially through Adult Special Education (ASE) by the Ministry of Advanced Education, is the only publicly-funded program in Canada that has a curriculum-based series of real world job skills development courses for blind and partially-sighted citizens. Students have come from all across the province, and to a lesser degree from other regions of Canada, to attend this vital program.

VCC's program helps to provide opportunities for blind and visually-impaired people by teaching skills that will enhance their career opportunities, personal potential, and academic success. The program can be studied on a part-time or full-time basis, and includes courses on braille, computers and computer skills (including Microsoft Office applications, keyboarding, database management, and internet training using speech, braille, and large print access), math and English upgrading, office administration, and more.

The skills taught are vital to success in the workplace, whether in traditional jobs or for self-employed entrepreneurs, as well as for those going on to take more advanced post-secondary programs.

Throughout the 30+ years that VCC has offered these courses and programs, the focus has been on providing a peer mentoring environment by employing qualified blind and partially-sighted instructors, and by supporting a dynamic classroom environment where students support each other's learning. It currently employs three blind and partially-sighted instructors and one sighted one.

Programs similar to this one are necessary in all regions of Canada, and any provincial Assistive Devices Program (ADP) aimed at providing the necessary funding to purchase assistive/accessible technology for use by blind and partially-sighted workers/students must be accompanied by sufficient high-quality training to ensure a reasonable chance at success.

The CCB's Get Together with Technology (GTT) program is a national training and support program that facilitates increased independence with the help of efficiently-utilized accessible technology. It operates using a peer support and mentoring model.

The benefits of accessible technology go well beyond access to information, and there are apps and solutions available for many everyday issues faced by those who are blind or have low vision, from product identification to mobility assistance supports to health and fitness support and more. The GTT program brings these tools, as well as support on how to use them, to those that need them. The GTT program has enjoyed remarkable success and has quickly adapted to the unique needs and challenges of its participants.

Meetings are held in partnership with and in the meeting rooms of public libraries, the CNIB, and organizations like Blind Beginnings. GTT participants learn about what services and supports are available in their communities, how to use them, and how accessible technology can improve their lives. In several cities across Canada, groups of individuals meet regularly. Participants can bring their own tech items to the meetings so they can learn hands-on from a peer. Guest speakers, new product demonstrations, and, most importantly, information sharing are available, ongoing, and always on the agenda. In rural Canada, a

monthly telephone conference call takes place, with subject matter similar to that of the face-to-face meetings.

In Edmonton, local vision-impaired tech professionals from groups like the CNIB, local learning institutions, and other service providers gather monthly for evening GTT sessions. Through donations, the group has been able to purchase electronic training materials such as audio tutorials and electronic textbooks that allow for self-paced learning on the use of various assistive technologies such as screen readers, screen magnifiers, smart phone GPS navigation, audio book reading, and more.

The GTT uses social media and marketing effectively, offering a blog, Facebook pages and groups, a list service, a Twitter feed, a website information dissemination service, and regular inserts in the CCB monthly newsletter to communicate to its members and the general public. Program participants are eager to stay on top of the latest trends, products, and news about accessible tech.

Having a program where the unique needs and concerns of persons who are blind, vision-impaired, or deaf-blind are addressed and where access barriers are removed or at least lessened is critical. Personal independence and increased confidence and participation in community life are but some of the benefits of GTT participation.

There is an abundance of assistive technologies available today. Remarkable progress has been made and we must applaud the efforts to make this happen. However, when it comes to the integration with everyday technologies, investment into accessible technology 'R&D,' access to assistive technologies, and the availability of appropriate training programs, there is still much work to be done.

Theme #2: Driving Change in Assistive Technology

The current framework for assistive technologies is wrought with challenges and areas for improvement. There is much work to be done in terms of driving change in assistive technology, from needed innovations to funding initiatives.

The Accessibility and Assistive Technology Survey found that a majority of respondents had achieved a post-secondary education, either through a specialized trade or university degree.
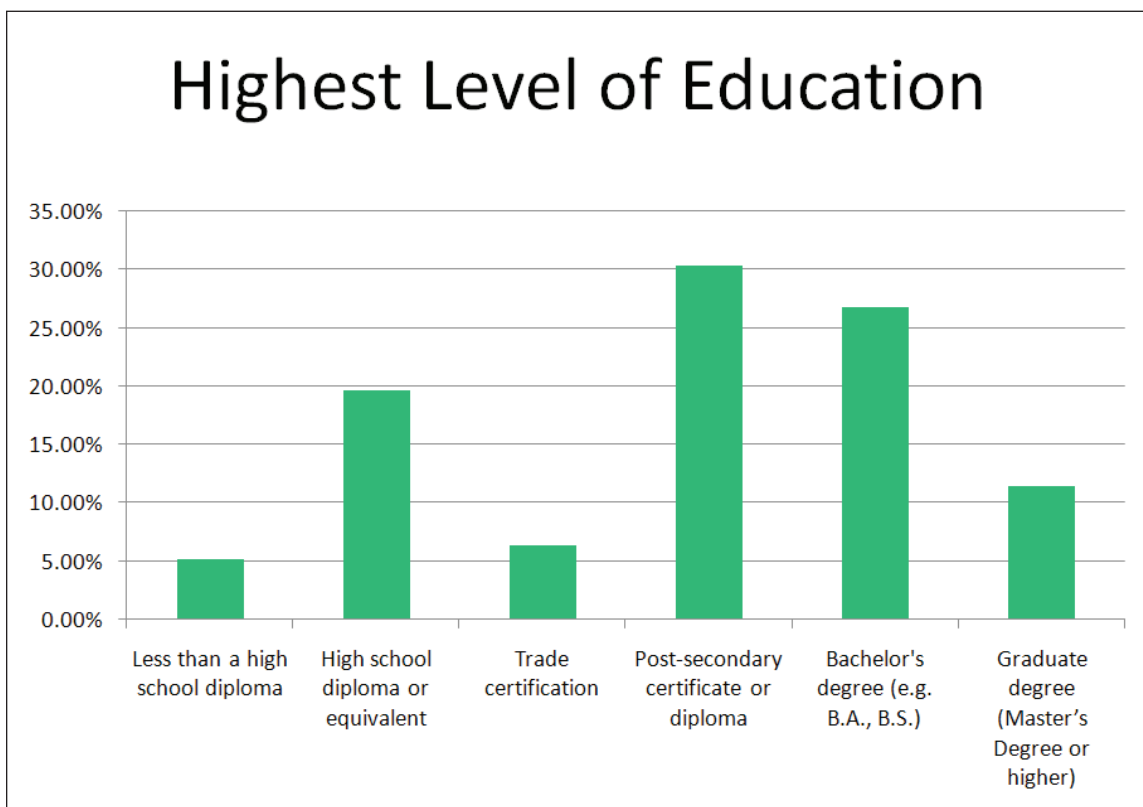
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For those who were unemployed, over half indicated that access to accessible and/or assistive technology was their biggest barrier to gaining and maintaining employment. To drive change, we must address this lack of access to help those with visual disabilities find meaningful employment. Research has shown that inclusive workplaces are better, more energizing places to work and are actually more profitable in the long term.

Barriers to Search for Employment
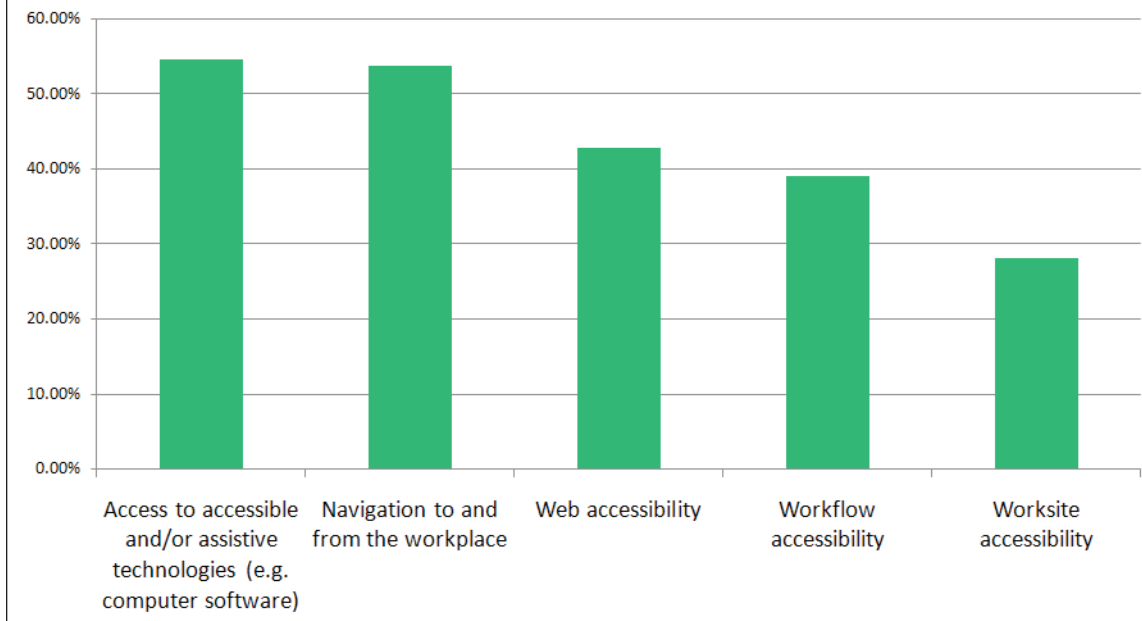
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Due to the increased difficulties students and recent graduates with visual disabilities have in locating early work experiences, it is also critical to focus on helping them secure early work experience, as early on during their educational journey as possible. This may take the form of volunteer work, co-op placements, internships, or part-time employment. Internships and other work-based learning programs can give students an opportunity to experience working in an employment setting while gaining valuable skills and work experience, and can also provide them with first-hand knowledge of how to request and use accommodations in an educational setting or workplace. Supporting internship programs aimed at assisting persons with visual disabilities to gain work experience (e.g. Access Careers) would therefore be beneficial.

Career services in post-secondary institutions also play an important role in helping interested students gain relevant work experience while in school. However, since career advisors serve the general student population, they

are often unfamiliar with the specific employment needs of students with visual disabilities, including issues of disclosure, interviewing, and requesting accommodations, including technological.

A combination of approaches is needed to ensure that individuals with visual disabilities can participate in our economy. Universal design aims to achieve systems and services that are universally accessible by anticipating the range of needs to be met in the design. Inclusive design is a process that engages the intended users in the design process, applying 'nothing about us without us,' and iteratively creating a system that can adapt to the different needs of the full diversity of individuals (i.e., aiming for the ability to provide one-size-fits-one in an integrated system). Inclusive design is a process, accessibility is the outcome. Universal design prepares the stage for the greatest access and inclusive design tailors the design to the needs of the individual, guided by their active participation. Both universal design and inclusive design attempt to achieve integrated rather than segregated access.

While accessibility services provide supports for students with visual disabilities to be successful academically, they are not mandated to provide general employment supports to these students. There is a need for disability services offices and career educators to streamline resources and opportunities for professional development that would better prepare post-secondary students with visual disabilities for the workforce.

When thinking about recruitment practices, it is critical to understand how employers traditionally recruit, and what barriers may be inherent in the traditional practices of recruitment. One approach to bridge the gap in successfully and equitably recruiting recent graduates with visual disabilities is to apply the concept of universal design to the recruitment and hiring process. The Center for Universal Design at North Carolina State University states, "The intent of universal design is to simplify life for everyone by making products, communications, and the built environment more usable by as many people as possible at little or no extra cost. Universal design benefits people of all ages and abilities." In relation

to electronic systems and technology, universal design is an electronics-based process of creating products, services, or systems so that they may be used by any person. Digital and electronic systems are most conducive to inclusive design, as they can responsively adapt to the specific needs of each individual, if they are designed inclusively. This benefits all users.

Inclusive outreach and hiring practices essentially entail making sure that outreach materials, networking and recruitment sites, communications, and application processes all include a range of accessible options, or are free of barriers that might deter people with visual disabilities from participating. Wherever possible, outreach and hiring resources generally should be equally accessible to workers with and without visual disabilities. For example, when designing job postings and applications for positions, it is important to ensure that the posting and the application are fully accessible to individuals who use screen-readers and other assistive computer technology. Targeted recruitment enables employers to reach and interview qualified people with visual disabilities.

To drive change and increase accessibility, technology developers and employers need to keep universal and inclusive design top of mind when it comes to workplace technology and job application software and processes. Universal access and inclusion involves philosophical changes in society among policymakers, builders, and employers alike.

Governments should closely evaluate funding allocations. Funding models were not designed to keep up with the rapid pace of innovation, and Canadians with disabilities are being left behind in the technological revolution that the rest of society enjoys.

One powerful tool the government can exert is their immense purchasing power. The government is the largest purchaser of goods and services, and we can use this power to drive industry change that requires full assistive technology integration for all operating systems. Take a school textbook, for example. If we demanded that school boards only purchase course materials that can

be presented in all accessible formats by default, the situation would change dramatically and quickly.

Improved access to accessible technology can be life-changing for those with low or no vision, both within and outside the workplace. Those that were once isolated suddenly have access to information like the daily newspaper, employment opportunities, or finding their voice on social media with a networks of friends. We should constantly check in and ensure that access is available so that all Canadians can benefit from the technology revolution.

Theme #3: The Future of Assistive Technology

When it comes to addressing the biggest barrier to accessible and assistive technology (cost), one of the best approaches includes a conversation on inclusive design. Inclusive designers look at the challenge of innovation differently, stretching our ideas of design to discover new technology. A study was conducted that looked at services and programs where the designer initially only considered the majority of society. The study found that over a five-year period, it cost far more to consider only what we think of as 'the majority.' The design was less flexible. Multiple requests for adaptations and changes had to be met, the design could not adapt to changes in the context, and the design was abandoned. Inclusive design costs more at the beginning, but it lasts longer and costs less in the long-term – it just depends on how you look at the equation.

Every individual has their own unique path, and for those seeking employment, a tailored approach is required. Programs that build skills and bridge those gaps to achieve employment are vitally important. An agenda that reframes the economic argument for assistive technology must be adopted. It is a fact that we all age, and inclusively-designed technology has the ability to improve life for anyone, irrespective of disability or ability. It is in the long-term and the big picture where we see the biggest benefit with inclusively-designed technology overall.

When looking to the future, we must also closely consider the role that transportation plays in limiting opportunities for the low-vision and blind

communities. There are currently huge gaps in service and transportation between cities and towns, limiting opportunities for so many. For someone living in a rural area, it can be quite daunting to make the trip into the nearest town. With access to the appropriate assistive technology, this is an easy issue to address. Thanks to ride-sharing apps and GPS systems, the future is limitless and we must be strategic and make improvements that lead to a more inclusive society.

An outstanding example of making travel much easier is VIA Rail Canada's recent work making the Ottawa Station more accessible for their blind and partially-sighted passengers. The goal was to allow them to navigate the station, from entering the platform to boarding the train, autonomously by using cutting-edge technologies. VIA Rail President and Chief Executive Officer Yves Desjardins-Siciliano states, "We felt that the optimal pairing of two technologies, beacon-based wayfinding (through a mobile app) and an echolocation obstacle detection device (in this case a wrist band), would address the core needs of white cane users, white cane users with additional mobility challenges, and guide dog users." While testing of the new assistive technology to ensure reliability and usefulness continues, VIA Rail anticipates that in the fullness of time this accessible technology will be deployed in all major stations.

Assistive technology is the key to providing genuine accessibility across our transportation industry. Supporting a national effort to make all major airports, train and bus stations, and marine landings accessible, with the added goal of the eventual seamless transfer from one mode of transportation to the other, is essential. People with disabilities would be well-served if other stakeholders within Canada's transport industry followed the path laid by VIA Rail.

When identifying the path ahead and those actions that will lead to positive change, access is a dominant theme. We must ensure that those who cannot afford the equipment or technology have the funding models in place so that these things are available to them, no matter where they live in Canada. The blind and low-vision communities must work together with all people with disabilities to make this change in Canada.

Recommendations

In order to maintain the trajectory of the shift from reliance on only post-market assistive technology to the inclusion of more mainstream technology that is accessible out-of-the-box, robust and meaningful legislation is required to ensure corporations and governments create an environment for equal access across the board.

Promoting Education in the Area of Accessible and Assistive Technology and Advancing its Dissemination

- The federal government might consider using its funding transfers to the provinces as a means of ensuring that programs similar to the Vancouver Community College's Visually Impaired Adult Program are established in all regions of Canada so that blind and partially-sighted would-be employees/students will be able to ready themselves for success in their chosen pursuits.

- Any provincial Assistive Devices Program (ADP) aimed at providing the necessary funding to purchase assistive/accessible technology for use by blind and partially-sighted workers/students must be accompanied by sufficient high-quality training to ensure a reasonable chance at success.

- Additional resources should be used to encourage employers to make their workplaces accessible, to educate employers in order to increase their understanding of what accessible and inclusive workplaces are, to encourage and fund additional on-the-job accessible training, and to establish meaningful and comprehensive Assistive Devices Programs in all provinces and territories.

- The federal government, in collaboration with the provinces, the post-secondary sector, and employers, should work toward increased funding and providing incentives for employers to develop and implement work-integrated learning opportunities for all students, including students with visual

disabilities, which are available across the breadth of the Canadian post-secondary education system.

- To drive change for Canadians with low vision or blindness in the work-place, the community must stand together to push employers to purchase only accessible and assistive systems, software, devices, and technology that includes all employees.

- Employers should be educated in accessible and assistive technology and how this can optimize their workforce.

Incentivizing Recruitment and Hiring

- One approach to bridge the gap in successfully and equitably recruiting recent graduates with visual disabilities is to apply the concept of universal design (UD) to the recruitment and hiring process.

- The federal government should develop and implement funding programs that incentivize employers to develop recruitment and hiring practices, and workplace cultures, based upon the principles of universal and inclusive design to achieve accessibility.

- The government should re-evaluate its goal of diminishing unemployment numbers by 4% amongst people with disabilities during the program's present term.

Supporting the Not-for-Profit Sector

- The federal government should provide resources to appropriate not-for-profit agencies and those working in the career transition space to develop and implement effective, measurable, and sustainable youth-targeted intervention programs aimed at enhancing the self-advocacy skill sets of youth with visual disabilities – particularly with regard to countering employer attitudes and myths and providing accommodations

as necessary. Such programs could include training workshops and mentorship activities.

Provincial-Federal Collaboration

- The federal government should seek the cooperation of the provinces and territories in creating a national program to provide affordable and relevant accessible assistive technology for those with seeing disabilities to assist in their education, employment, and quality of life.

- The federal government should seek the cooperation of the provinces and territories to consider the creation of a program that will provide incentives to the private sector for the purchase of accessible assistive technology to help offset the costs of hiring people with seeing disabilities.

- The federal, provincial, territorial, and municipal governments should consider notifying the technology sector that from this point forward (one year warning) they will, as a group, no longer purchase technology that is not assistive.

- The federal government should consider/investigate an affirmative action program to level the playing field between people with disabilities and those without.

Improving Reliability of Data on Persons with Sight Loss

- The CCB recommends that an audit be undertaken to determine who, how, and what data collection is being done for persons with disabilities. The general view by CCB and other stakeholders is that the census is grossly inadequate in fulfilling the information needs of people with disabilities, let alone people with sight loss. We need a national conference on the issue of data collection.

Future Review and Analysis

We believe it relevant to perform more detailed language analysis and to delve deeper into the individual comments, particularly the ones that speak about specific technologies and people's use of that technology. Investigating the emotional state of people's comments to get a deeper understanding of the community's acceptance or rejection of the current environment as it pertains to work, technology, and more broadly may also provide relevant insights outside the current scope. The opportunity to perform further cross analysis and collation with other demographic information and/or data could provide us better or yet unknown insights into the data, its discrepancies, and any biases or other influences that may be present.

We must work together to improve access so that Canadians with disabilities are able to use what everyone else uses and not to depend on a set of specialized tools that come at a high cost. This will mobilize individuals to actualize their full potential in the home, school, and workplace.

Canadians deserve equal access to technology that can have a positive impact on their lives. The provinces should build an infrastructure for those who require financial assistance, so they can all actualize their full potential.

Technology that is available for everybody should ideally also be sufficiently adaptable for the low-vision and blind communities.

The integration with everyday technologies needs to improve and investment into accessible technology 'R&D' is of importance and needs to be encouraged.

Conclusion

Canadians with vision loss face barriers in accessing assistive technologies needed for searching for employment, learning necessary skills to gain employment, and learning the use of assistive technologies when available.

Additionally, the government does not provide sufficient accessibility legislation

for barrier-free workplaces and employers have a poor understanding of accessibility related to vision loss.

When all Canadians have equal access to technology, everyone benefits. Society at large will be better off when workplaces are inclusive and diverse, when individuals are able to work and travel independently, and when those with visual disabilities are able to maintain strong, healthy connections to community rather than suffer isolation due to a lack of access to technology.

ABOUT THE CANADIAN COUNCIL OF THE BLIND

The Canadian Council of the Blind (CCB) is the "Voice of the Blind™" in Canada. Founded 75 years ago in 1944 by returning blind veterans and schools of the blind, the CCB is a membership-based registered charity that brings together Canadians who are blind, living with vision loss, or deaf-blind through chapters within their own local communities that provide the opportunity to share common interests and social activities. The CCB works tirelessly to improve the quality of life for persons with vision loss through advocacy, awareness, peer mentoring, sports adapted for persons with sight loss, and the promotion of health and fitness.

The CCB works with several national organizations of and for the blind, heath care organizations, various accessibility committees, and international organizations all dedicated to improving the well-being of those living with sight loss. Through these relationships, we all come to a better understanding of the barriers faced by those living with sight loss in our great country.

The CCB is proud of these efforts to change what it means to be blind and of its leadership role through initiatives that call for the provision of the very best in available medical treatments and the fostering of patients' rights, all while recognizing that blindness and vision loss are preventable.

CANADIAN COUNCIL
OF THE BLIND

ACKNOWLEDGEMENTS

Contributors

Alan Bridgeman

Bridgeman is a visually-impaired Computer Science student at the University of Manitoba, where he also works as an HR Systems Analyst. As a part of his degree, Bridgeman has received a specialization in databases and data analytics and a minor in management, with a keen interest in Management Information Systems. Bridgeman has significant past experience performing data and metadata analysis for libraries, private companies, and governments. In his free time, Bridgeman volunteers heavily in the visually-impaired and wider disability community. He currently holds a number of positions within the community, including Provincial Council Chairman of the Manitoba League of Persons with Disabilities (MLPD) and Manitoba Director of the National Educational Association of Disabled Students (NEADS).

Louise Gillis, B.Sc.N., RN

A former nurse, Gillis has been the National President of the Canadian Council of the Blind since 2011. Gillis works with many other groups, including the International Federation on Ageing (IFA) and Barrier-Free Canada, and sits on the Women's Committee of the World Blind Union.

Chelsea Mohler, M.Sc.

Mohler currently works in the dual roles of Assistive Technology Educator and Community Engagement Specialist at BALANCE for Blind Adults. She is also an active member on the Government of Ontario's Education Standards Development Committee.

Albert Ruel

Ruel is the Canadian Council of the Blind's Get Together with Technology (GTT) Western Canada Program Coordinator. A social service worker by trade, he works in the not-for-profit blindness and low-vision rehabilitation, technology training, and advocacy sectors.

Ather Shabbar, M.Des.

Shabbar is an OCAD University graduate and an inclusive designer and organizational development practitioner who has served as a senior manager in the Ontario Public Service. He has led capacity building projects and leadership development in Ontario as well as public service in developing countries.

Shabbar is a masterful facilitator who works in a highly collaborative and inclusive manner and employs a variety of methodologies borrowing from adult education, organizational learning, and inclusive design. He is passionate about human rights and systemic change to mitigate barriers where diverse perspectives are valued and every individual has opportunities to contribute to their full potential. Shabbar has extensive experience in innovative, agile, and iterative co-design initiatives which foster collaboration, individual and team learning, and organizational change that result in outcomes that benefit everyone.

Dr. Jutta Treviranus

Treviranus is the Director and Founder of the Inclusive Design Research Centre (IDRC) and the Inclusive Design Institute (IDI). She is also a professor in the Faculty of Design at OCAD University, where she founded an innovative graduate program in inclusive design.

SPECIAL THANKS

The Canadian Council of the Blind gratefully acknowledges the following people and organizations who contributed to this report: 453 respondents in both official languages, Tania Amardeil, Michael Baillargeon, BALANCE for Blind Adults, Luna Bengio, Sam Berns, Richart Bocxe, Alan Bridgeman, CNIB, Darren Douma, Doug Earle, Foundation Fighting Blindness, Louise Gillis, Deborah Gold, Becky Goodwin, David Greene, Terry Hoddnott, Kim Kilpatrick, Robert McCreight, Laurent Messier, Chelsea Mohler, Shelley Ann Morris, Lorne Neufeldt, Ethan Pigott, Jim Prowse, Albert Ruel, George Schweizer, Ather Shabbar, Corry Stuive, Jutta Treviranus, and Ian White, all of whom without whose help this Needs Report on Accessible Technology could not have been achieved.

CANADIAN COUNCIL
OF THE BLIND

SUMMARY OF SURVEY FINDINGS

Provided to the Accessible Technology Program (AT),
Department of Innovation, Science and Economic Development (ISED) by
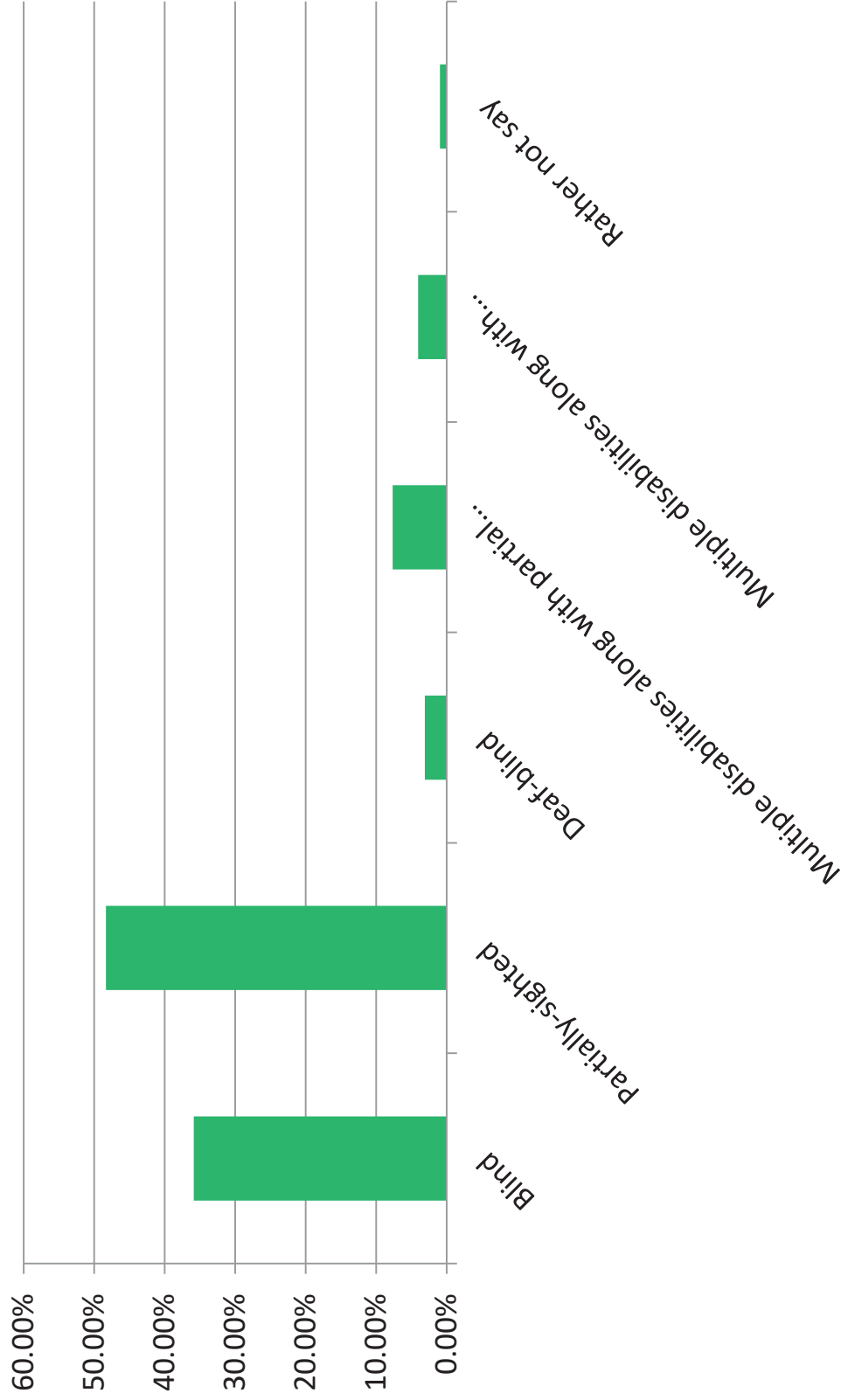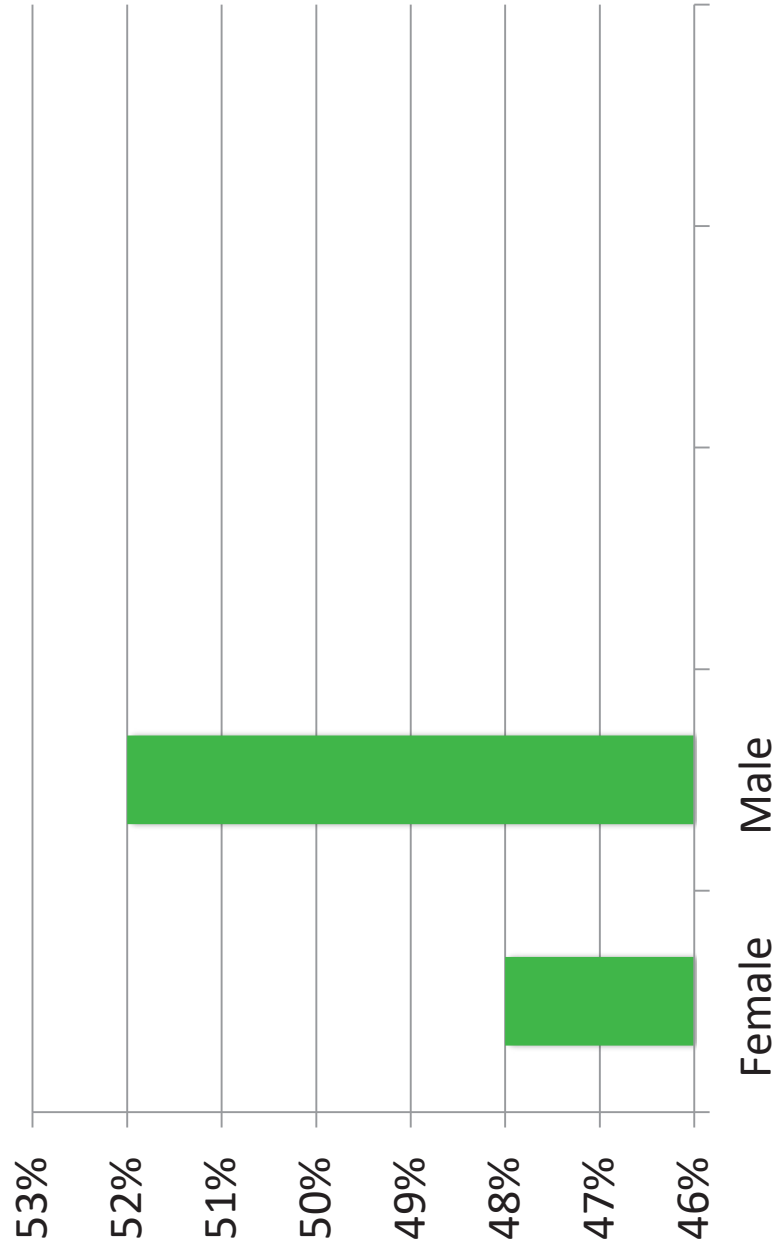*the Canadian Council of the Blind*

April 9, 2019

Table of Contents

Respondents' Level of Vision Loss

426/453 responding

Level of Vision Loss	Percentage
Blind	~35%
Partially-sighted	~48%
Deaf-blind	~3%
Multiple disabilities along with partial...	~6%
Multiple disabilities along with...	~4%
Rather not say	~1%

Axis labels: 0.00%, 10.00%, 20.00%, 30.00%, 40.00%, 50.00%, 60.00%

Gender

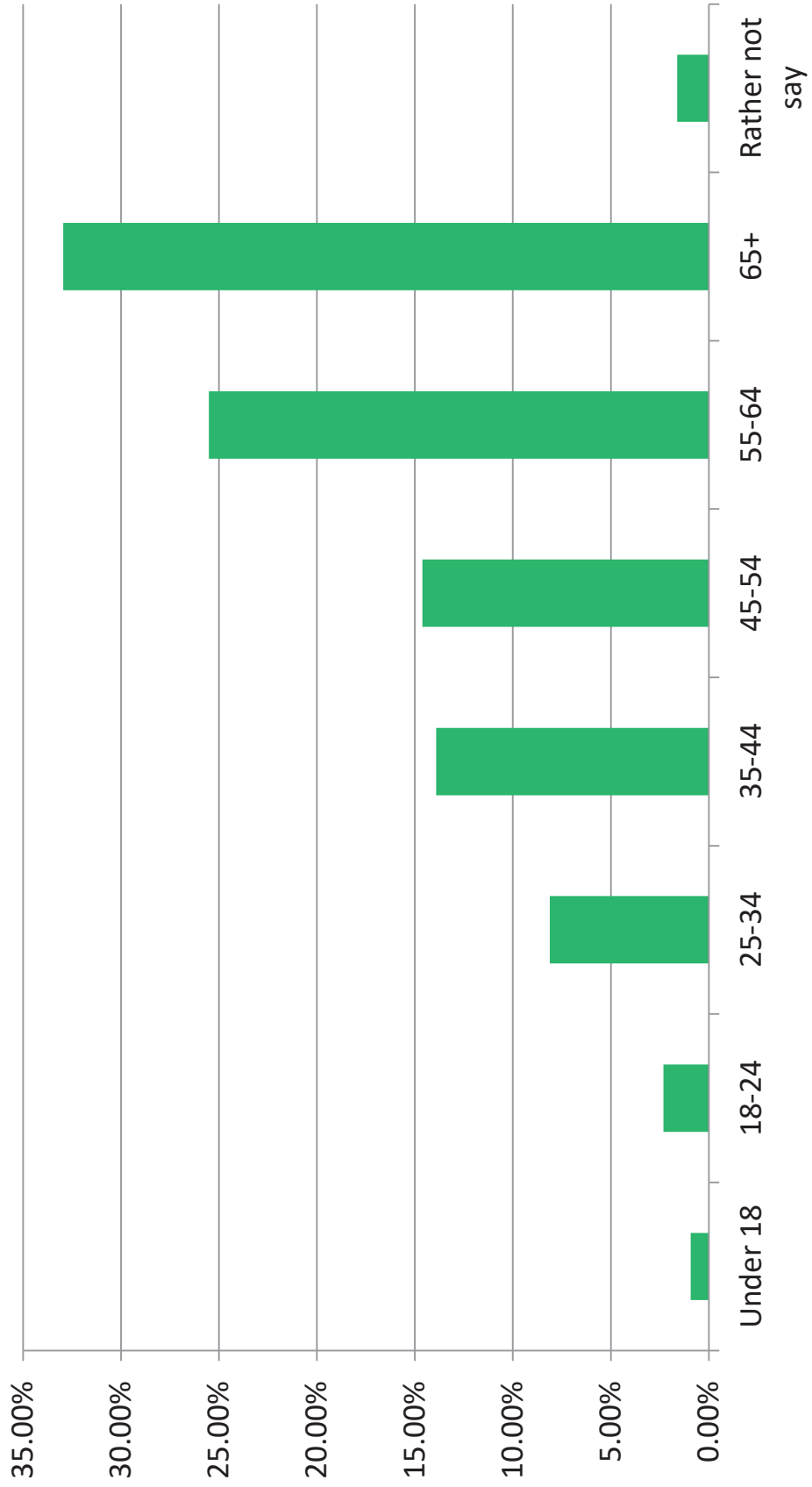53% | 52% | 51% | 50% | 49% | 48% | 47% | 46%

Male

Female

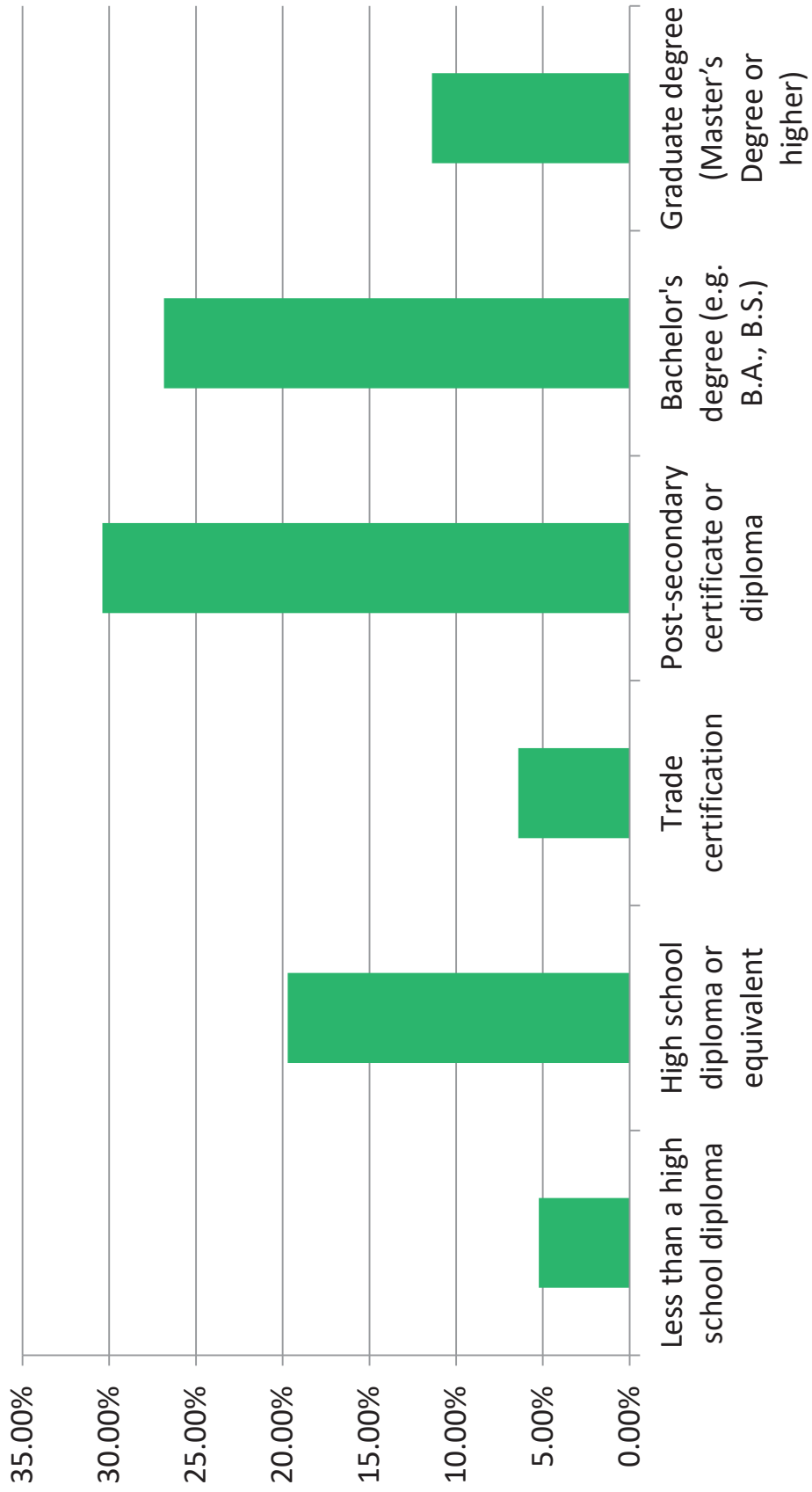**442/453 responding**

Age

439/453 responding

Highest Level of Education

429/453 responding

Field of Study
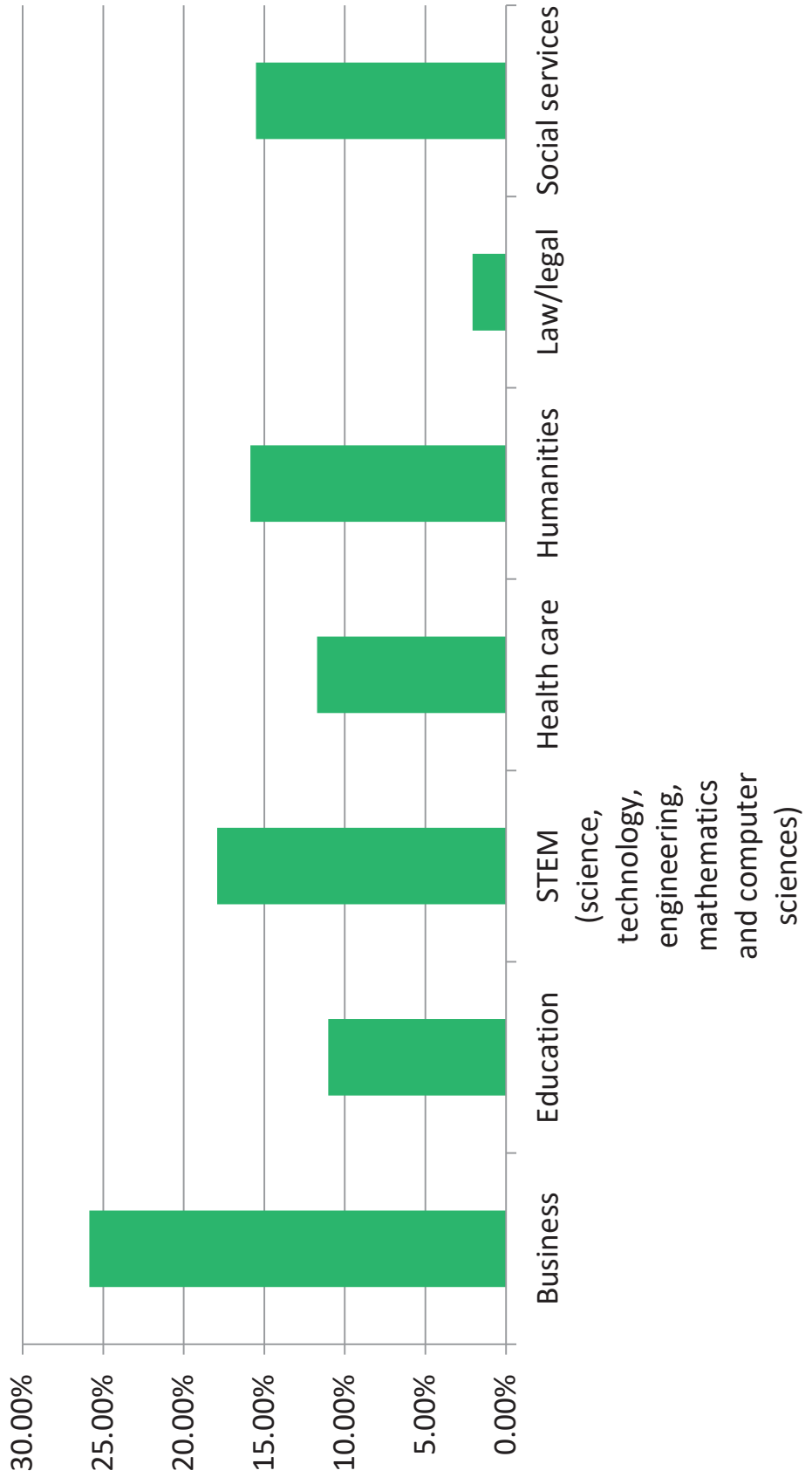
296/453 responding

Aspiration for Further Education

Aspire for Further Education

Do Not Aspire for Further Education

Note: 49% of Respondents Did Not Answer the Question

58%

42%
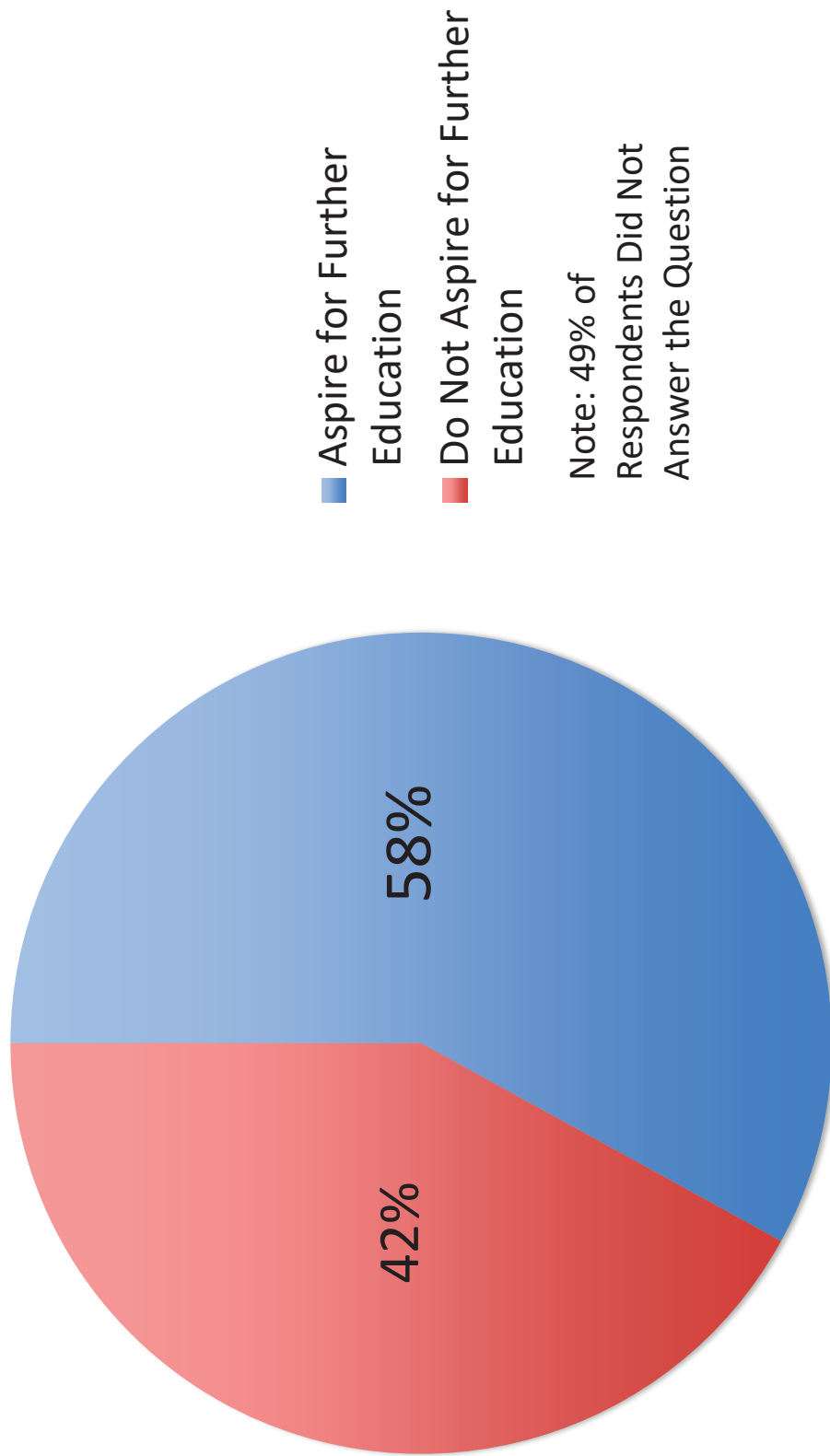
230/453 responding

Current Employment Status
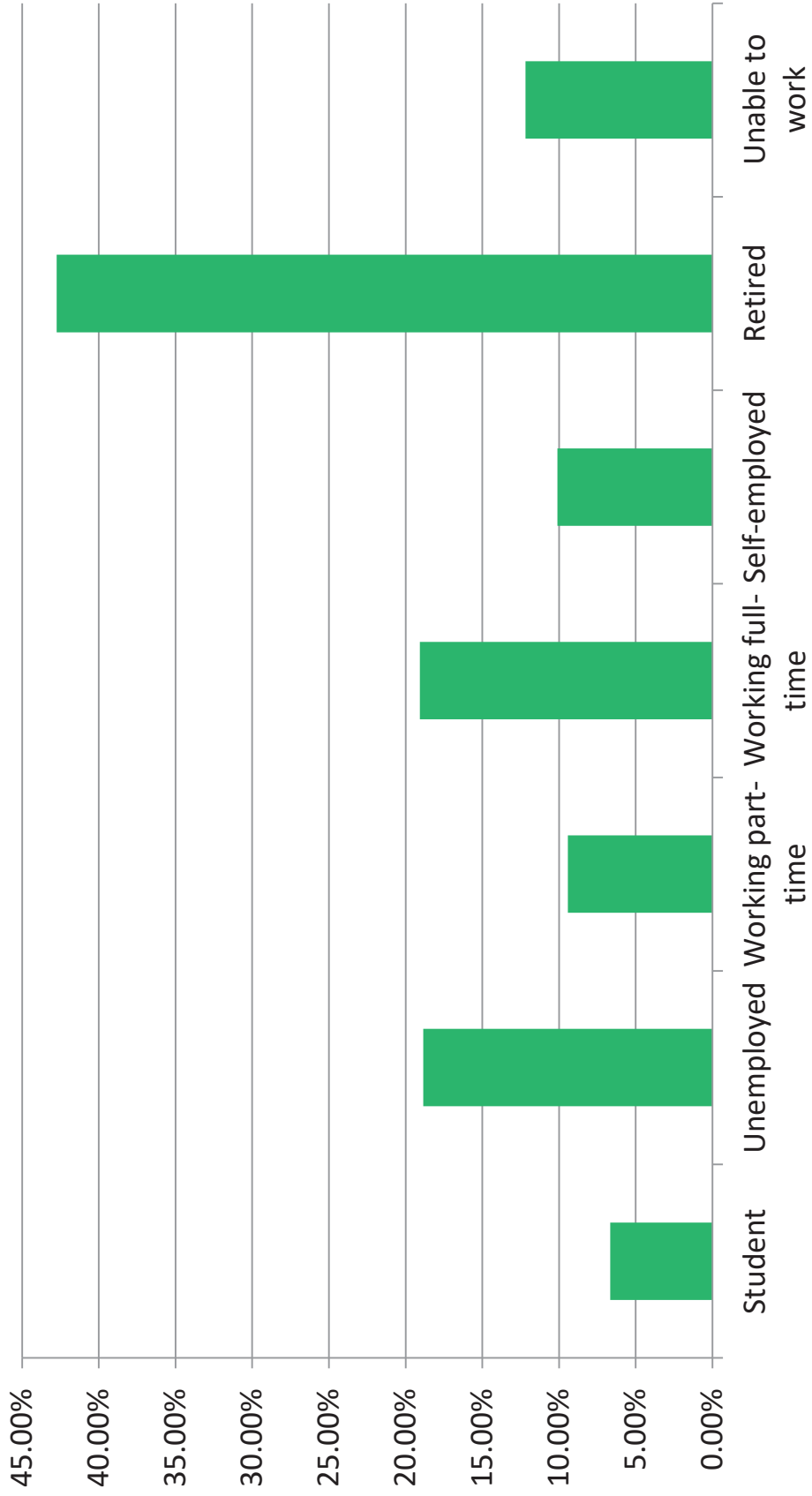
443/453 responding

Currently Employed in Field of Study

53.00%
52.00%
51.00%
50.00%
49.00%
48.00%
47.00%
46.00%
45.00%
44.00%

No

Yes
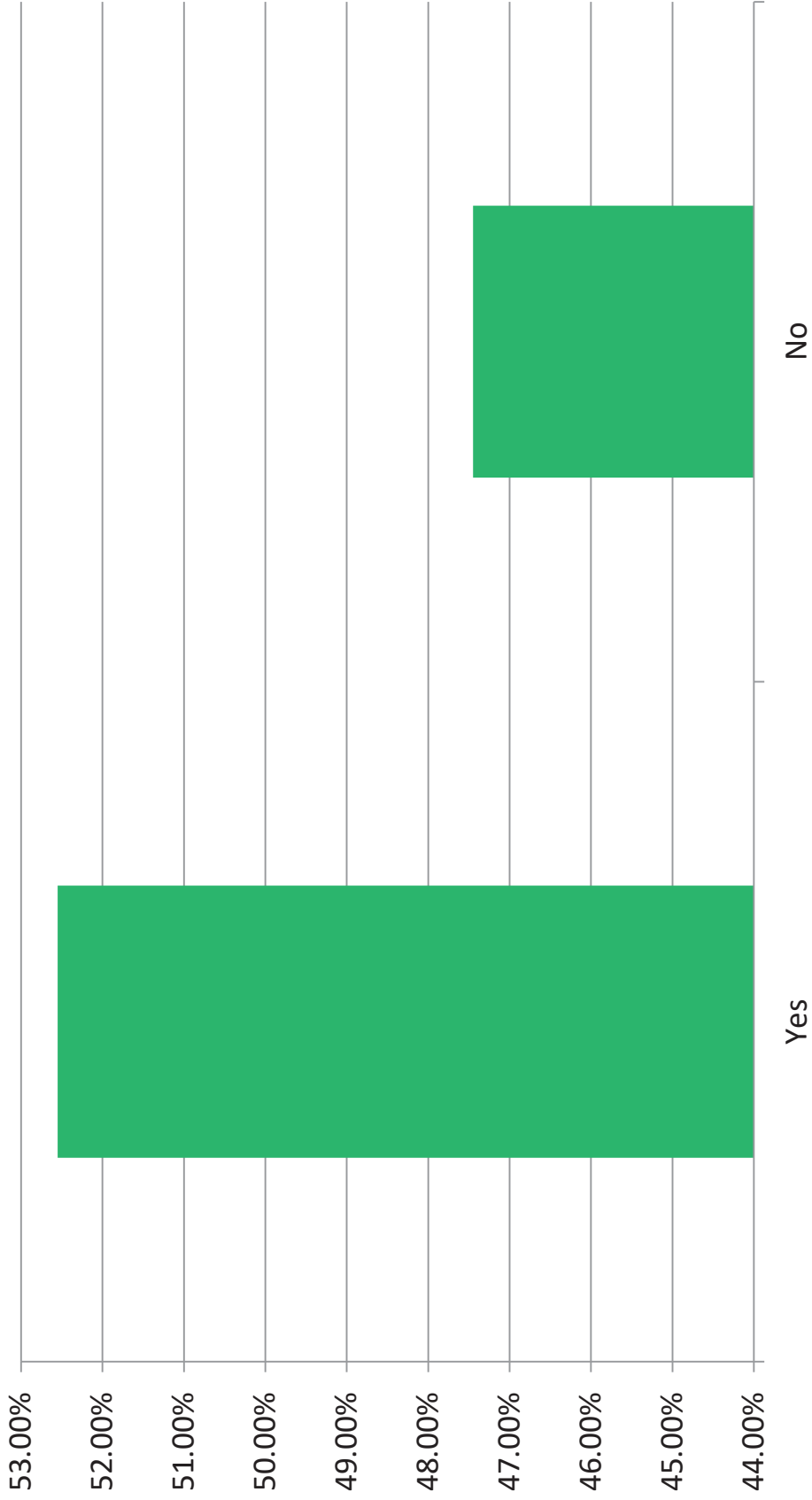
203/453 responding

Barriers to Search for Employment

Chart categories (left to right):
- Access to accessible and/or assistive technologies (e.g. computer software)
- Navigation to and from the workplace
- Web accessibility
- Workflow accessibility
- Worksite accessibility

Y-axis: 0.00%, 10.00%, 20.00%, 30.00%, 40.00%, 50.00%, 60.00%
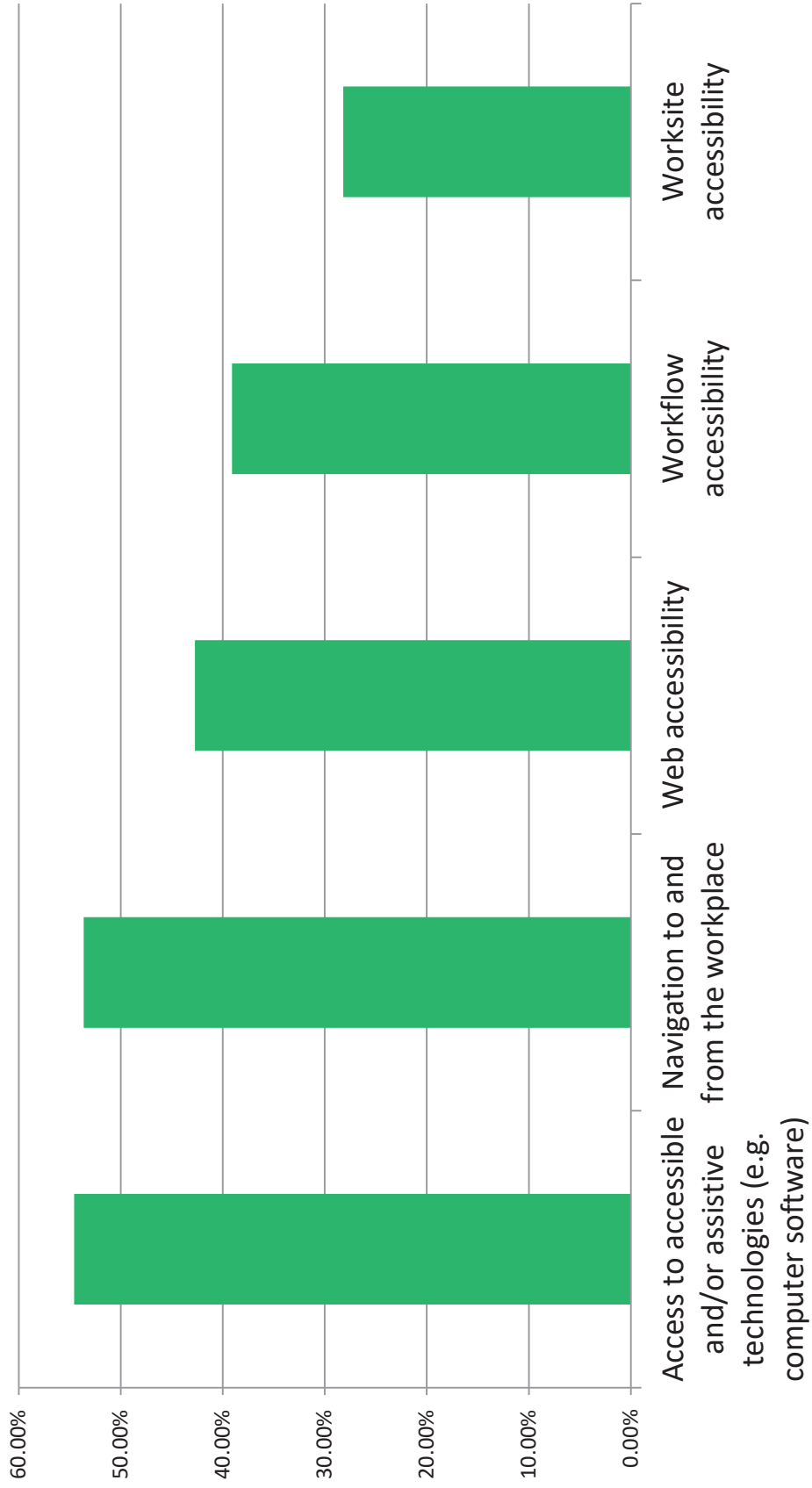
110/453 responding

Assistive Technologies Currently Used

Artificial intelligence (AI) app for...
Distance magnification for navigation
Braille note taker
GPS
Guide dog
Head-worn camera for magnification
Head-worn camera for OCR (optical)
Large print...
Paper braille display with...
Recorder for note taking
Refreshable braille display with...
Scan-and-read app/device for OCR
Screen reader (PC/Mac)
Magnification of screen reader and...
Combination (PC/Mac)
Smart phone
Tablet
Talking book player/app
Talking GPS app/device
White cane

80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%

436/453 responding

Received Formal Training in the Use of Accessible/Assistive Technology
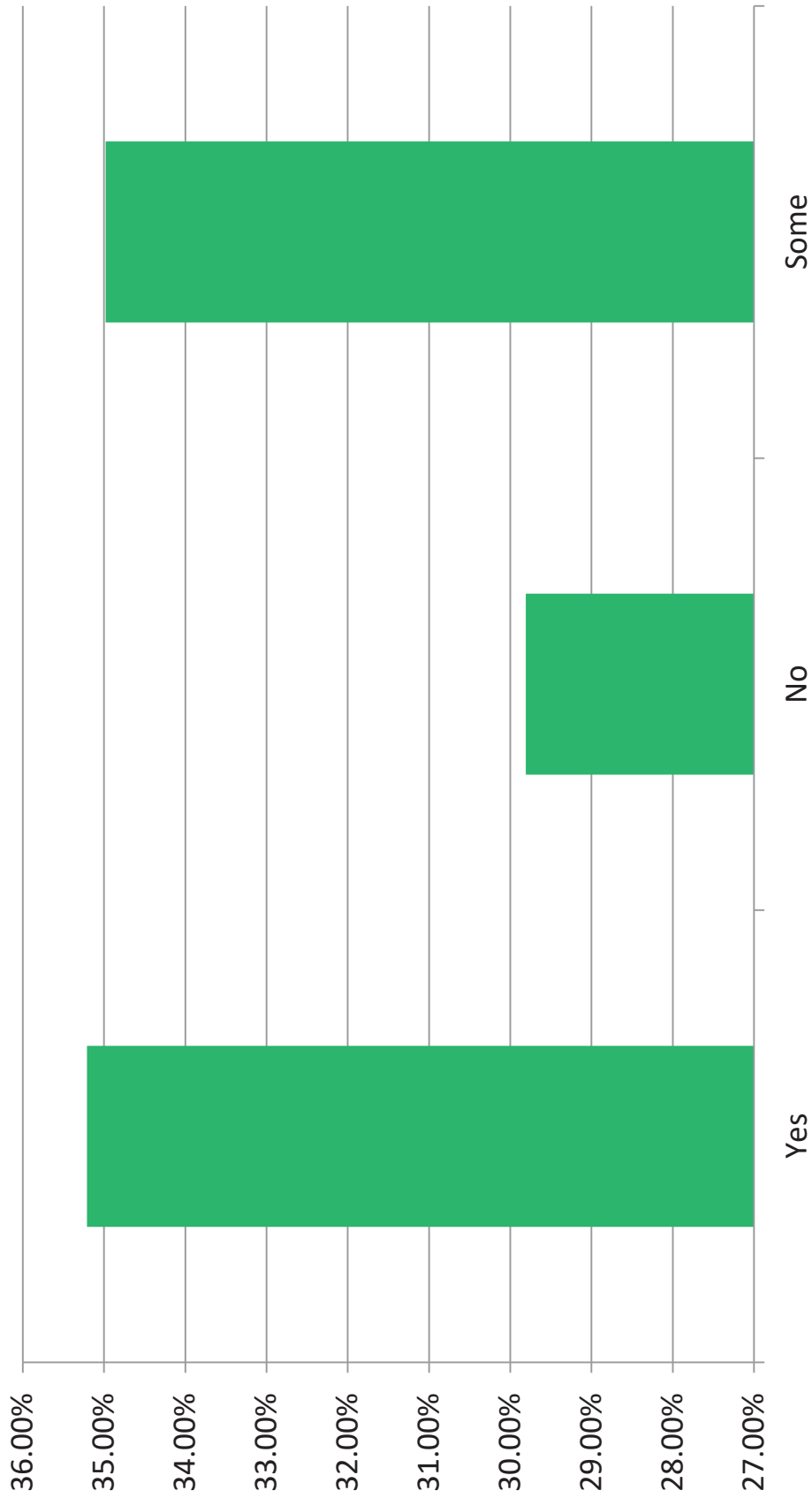
434/453 responding

Current Level of Proficiency with Employment-Related Assistive Technology

344/453 responding

Assistive Technologies Needed to Acquire/Learn for Successful Career or Achieving Employment
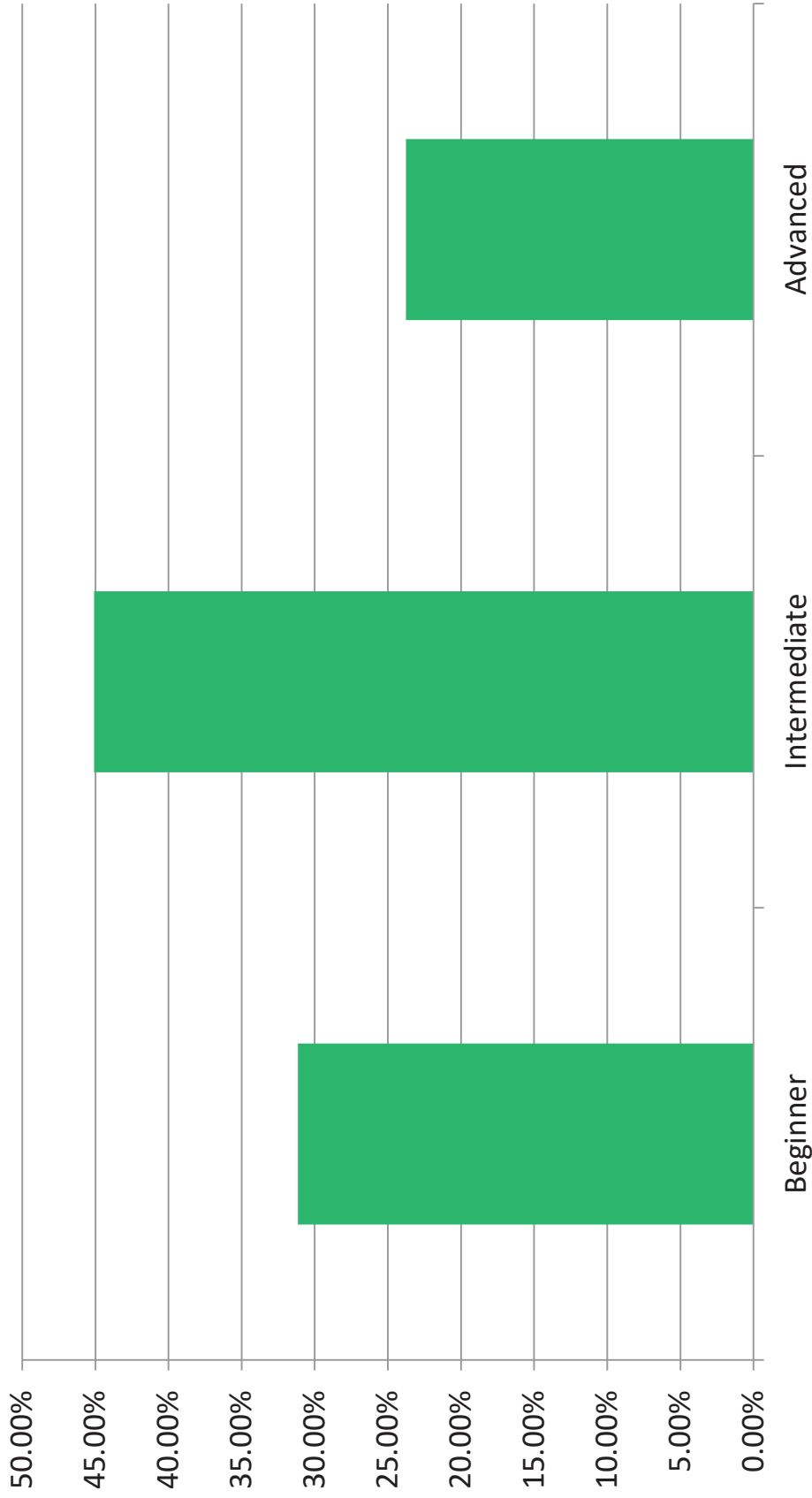
Chart categories (bottom to top):
- Artificial intelligence
- Braille note taker
- Distance magnification
- GPS
- Guide dog
- Head-worn camera for…
- Head-worn camera for…
- Head-worn camera for…
- Large print
- Paper braille for note…
- Recorder for note taking
- Refreshable braille…
- Scan-and-read…
- Screen reader (PC/Mac)
- Magnification (PC/Mac)
- Combination of screen…
- Smart phone
- Tablet
- Talking book player/app
- Talking GPS app/device
- White cane

X-axis: 0.00% 5.00% 10.00% 15.00% 20.00% 25.00% 30.00% 35.00% 40.00%

226/453 responding

Job Application Process Not Accessible

	48.00%	48.50%	49.00%	49.50%	50.00%	50.50%	51.00%

No

Yes
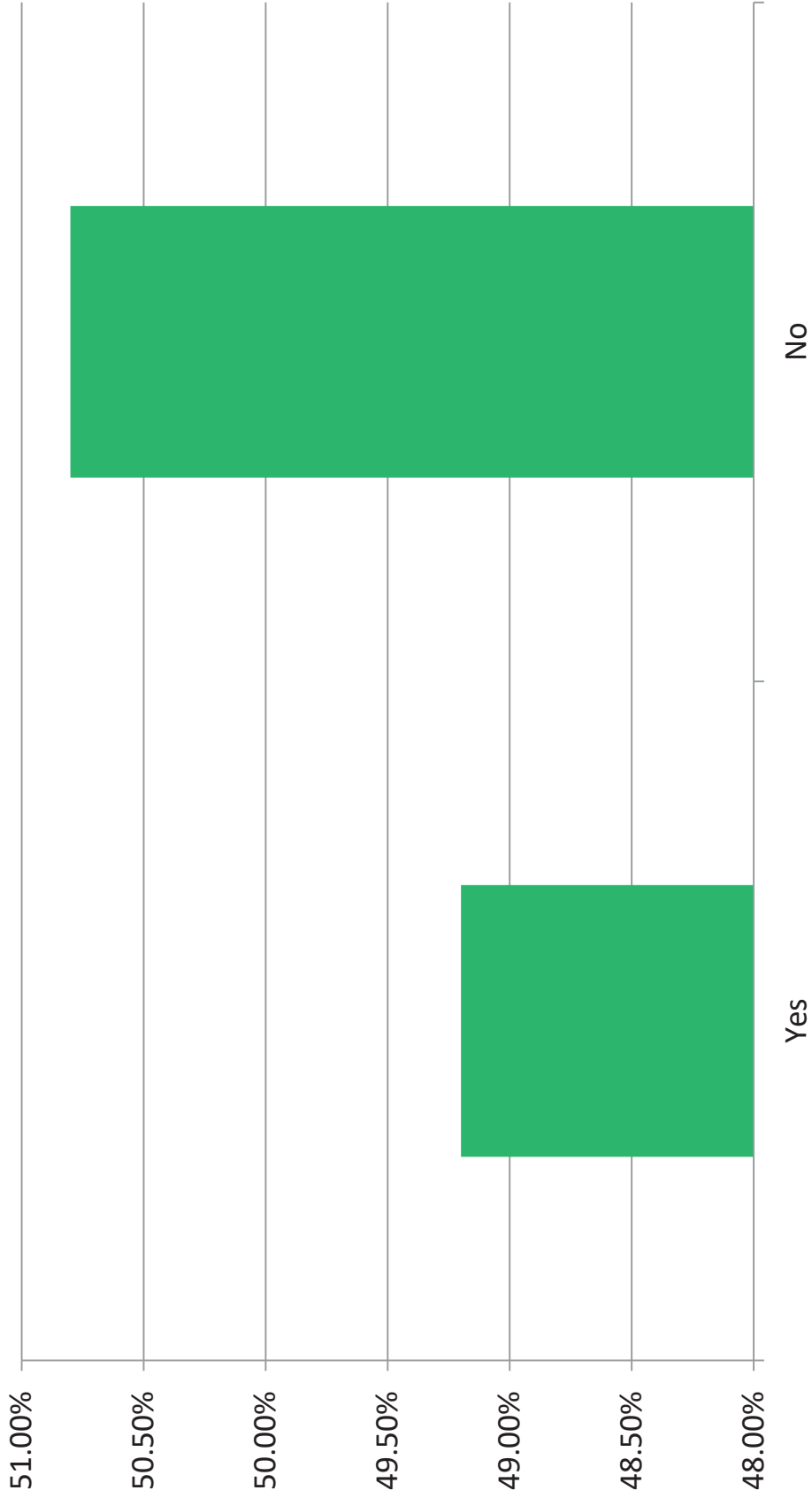
381/453 responding

Major Impediments for Advancing in Present or Higher Employment Level

Categories (bottom to top):
- My lack of specific skills and/or...
- Poor employer understanding of...
- Lack of access to accessible...
- Lack of workflow accessibility
- Lack of worksite accessibility
- Lack of opportunities to mentor...
- Lack of legislated accessibility

Axis: 0.00%, 10.00%, 20.00%, 30.00%, 40.00%, 50.00%, 60.00%
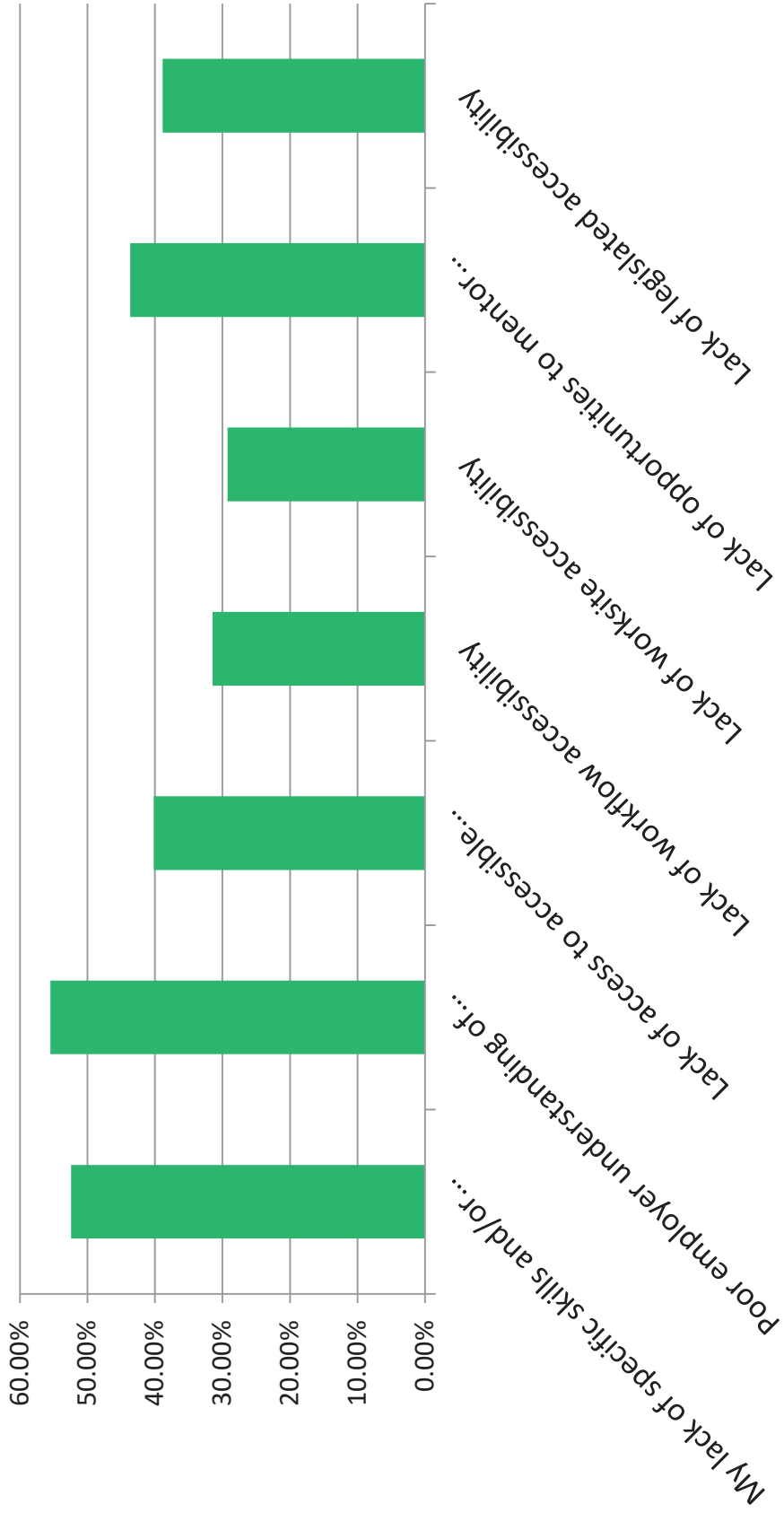
235/453 responding

Types of Training Needed to Achieve Employment
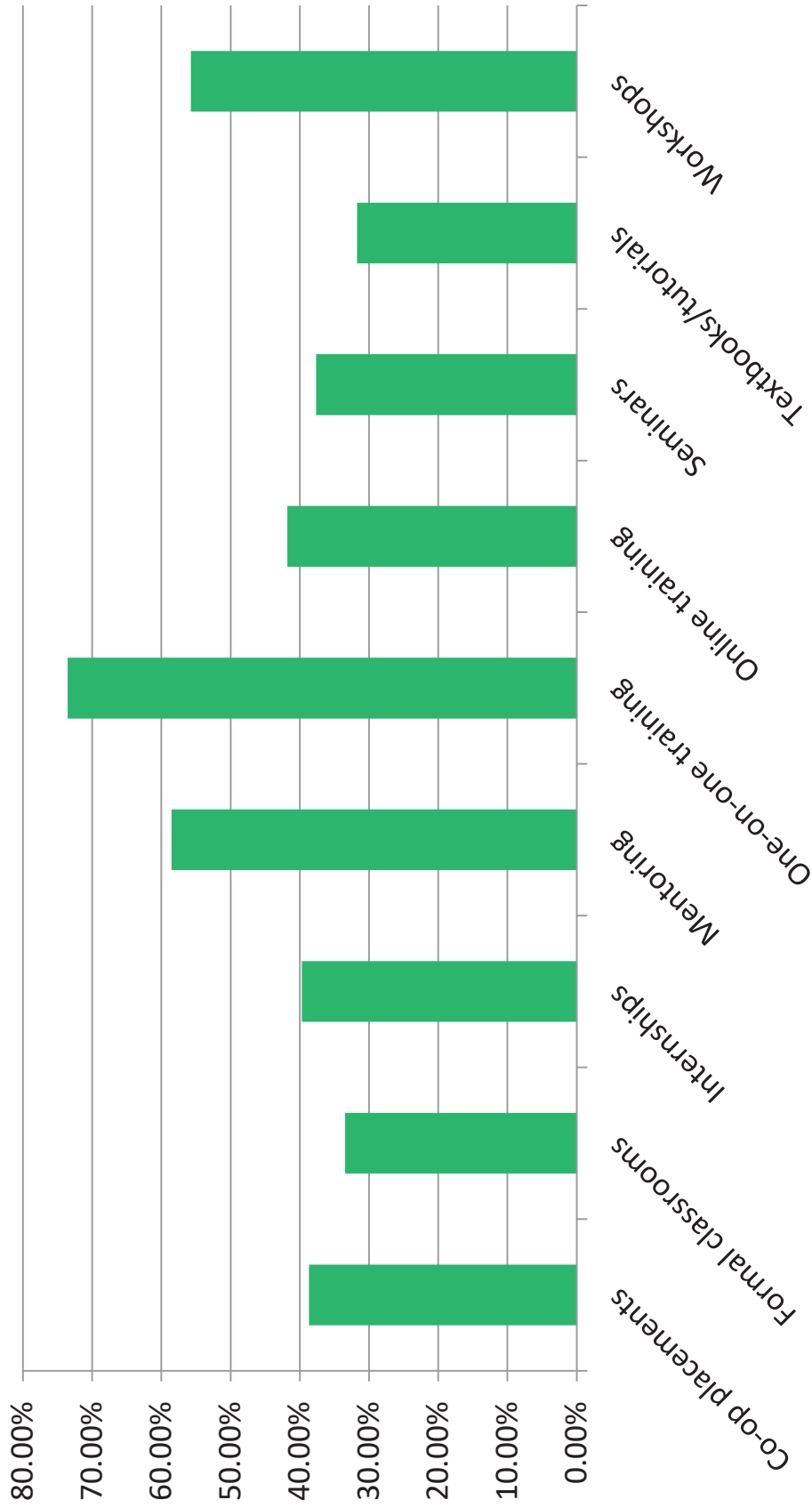
332/453 responding

Ideal Workplace

80.00% 70.00% 60.00% 50.00% 40.00% 30.00% 20.00% 10.00% 0.00%

Work independently

Work as part of a team

Work in an office

Work in an open-concept office

Work from home

Work in a retail setting

Work outdoors
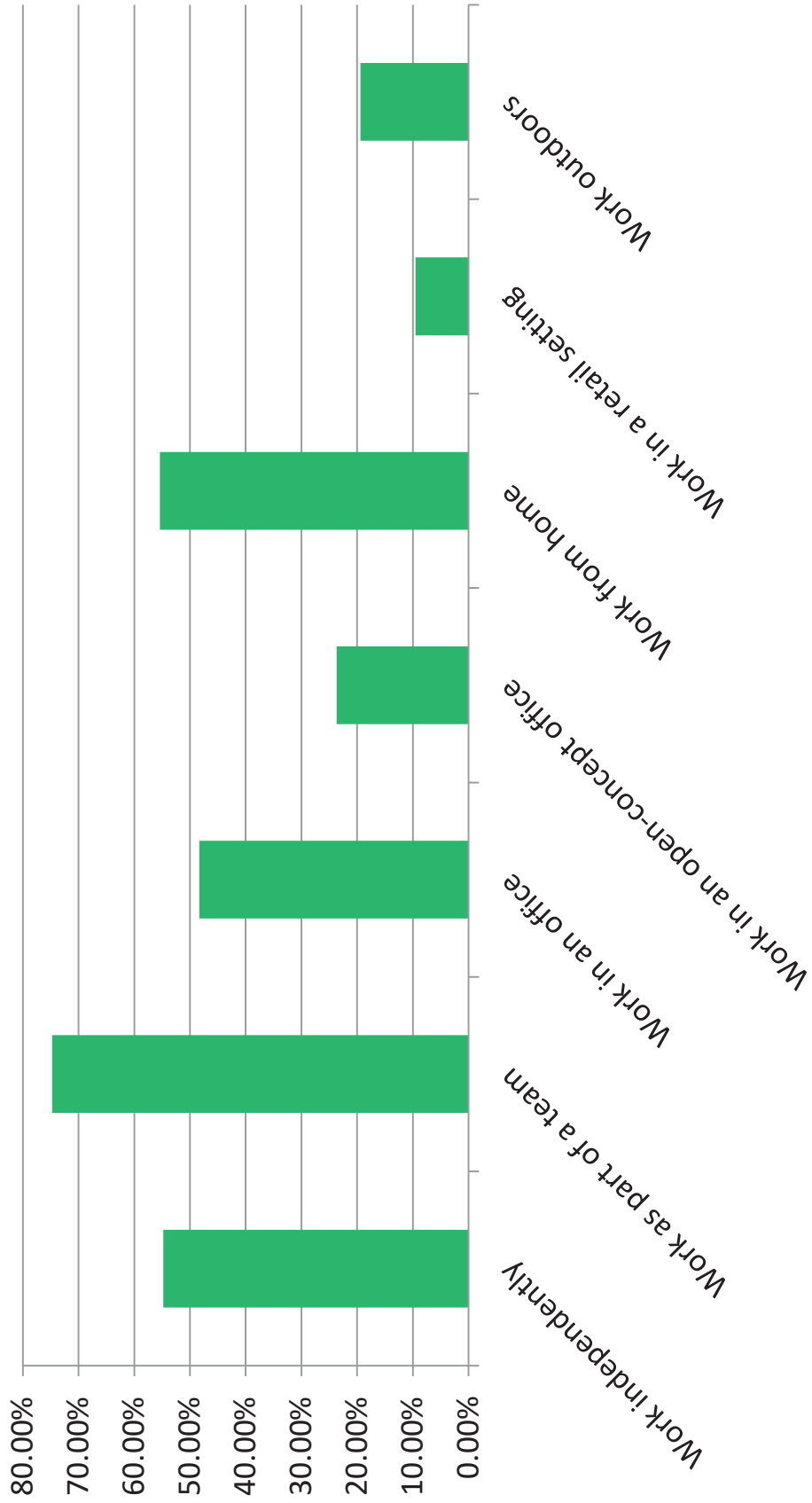
293/453 responding

CCB Survey Response Rate

Province/Territory	Percentage of Respondents
Alberta	1%
British Columbia	23%
Manitoba	0.03%
New Brunswick	0.02%
Newfoundland and Labrador	0.03%
Northwest Territories	0%
Nova Scotia	0.05%
Nunavut	0%
Ontario	46%
Prince Edward Island	0%
Quebec	0.05%
Saskatchewan	0.04%
Yukon	0.003%

399/453 responding

SUMMARY OF SURVEY ANALYSIS: QUALITATIVE REPORT

*Provided to the Accessible Technology Program (AT),
Department of Innovation, Science and Economic Development (ISED) by
the Canadian Council of the Blind*

April 9, 2019

PURPOSE OF THE SURVEY

The purpose of the Accessibility and Assistive Technology Survey was to obtain current insights into the landscape of Canadians who are living with vision loss. The survey specifically delved into the current state of affairs regarding access to assistive technology and barriers faced by Canadians with vision loss including employment, transportation, cost of technology, and access to financial assistance.

SCOPE OF THE SURVEY

The survey was conducted using Survey Monkey and was designed to reach the maximum number of people with vision loss throughout Canada. The Canadian Council of the Blind (CCB) undertook an extensive outreach strategy in order to maximize the number of respondents from its membership in each province and territory. In total, the survey was distributed to approximately 1,250 people including:

- The CCB email distribution list and web visitors;

- Exhibitors and attendees who participated in the February 2, 2019 CCB Toronto Visionaries 'Experience' Expo and Assistive Technology Forum;

- Through various sight loss stakeholders' social media platforms; and

- Through the CCB's social media channels (Twitter and Facebook).

The survey was conducted in both official languages, French and English.

TIMING OF THE SURVEY

The survey was conducted over a span of 26 days, between February 22, 2019 and March 19, 2019.

RESPONSE RATE

The final response rate was estimated at between 28-33%. The CCB met its projected target of 450 responses, collecting 453 completed surveys,

averaging 17.4 responses daily. We separated approximately 1,490 people with vision loss from various lists, all of whom received the survey on multiple occasions. According to Survey Monkey, a response rate of 30% is an acceptable response rate.

Responses came from all provinces and territories except Prince Edward Island, the Northwest Territories, and Nunavut. There were 8 responses out of 453 that were in French. Direct email was the most effective means of reaching responders, while social media was for the most part judged to be inferior and ineffective.

RESPONDENTS' DEMOGRAPHICS

- 84% of respondents were blind or partially-blind, while 16% of respondents had multiple disabilities;

- 52% of respondents were men and 48% were women;

- The largest age group among respondents (33%) were people who are 65 years or older. The second largest group was respondents who are between 55 to 64 years old. Younger respondents were smaller groups;

- In terms of the education level of the respondents, 38% had completed post-secondary education, 37% had completed a certificate program or trade certification, and 26% had completed high school. The largest field of study among respondents (26%) was business, while 18% studied STEM (science, technology, engineering, mathematics, and computer science). Further, 65% of respondents aspire to continue their education;

- 19% of respondents were unemployed. This result is misleading, however, in that it includes survey respondents who are not considered eligible for labour force participation, such as retirees, individuals who are unable to work, and students. This analysis also assumes that the respondents who provided information about their employment status did not choose more than one response, e.g. that respondents who indicated that they are

'unemployed' did not also choose 'retiree' or 'student.' Of the 57.5% (225 respondents) who are in the labour force, 33% are unemployed, 33% are working full-time, 16% are working part-time, and 18% are self-employed. The labour force participation rate of 57.5% includes respondents who are of working age, able to work, and are employed full-time, part-time, self-employed, or are eligible to work but are currently unemployed. Respondents therefore actually had a 33% unemployment rate, which is over four times higher than Canada's present unemployment rate of 7.9%. (The participation rate of Canadians without disabilities in the work force is 79%, which is a 21.5% advantage over Canadians with seeing disabilities); and

- The survey showed that 33% of respondents were of age 65 or over, while 43% were retirees. This may indicate that there is a propensity for those with sight loss to retire before they reach the standard retirement age of 65.

BARRIERS TO EMPLOYMENT

- Among those who are not employed, 55% told us they faced barriers to employment due to lack of access to assistive technology, 54% said they faced transportation barriers, and 43% faced barriers due to lack of web accessibility;

- Respondents told us they use assistive technology such as smart phones, GPS, and TalkBack devices. Only 35% said they had adequate training in the use of the devices they employ, while 35% said they had some training, and 30% had no training at all. Respondents' proficiency with employment-related assistive devices was 31% beginners, 45% intermediate, and 24% advanced;

- Respondents told us that the assistive technologies they need to acquire and/or learn in order to be successful in their careers or in achieving employment are computer screen readers, smart phones, TalkBack devices, and GPS;

- 49% of respondents indicated that the job application process is not accessible;

- Major impediments to employment advancements faced by respondents included a lack of assistive devices (43%), a lack of legislated accessibility (35%), poor employer understanding of visual impairment (55%), and lack of mentoring opportunities (43%);

- Respondents indicated that an ideal workplace where 74% would like to work is in a team setting and 48% would like to work in an office. The type of training respondents prefer is one-on-one training (74%), while 59% told us that mentoring is their preferred training method.

Note: This report presents findings from the CCB Accessibility and Assistive Technology Survey only. Due to time constraints, the report does not compare findings of the 2012 and 2017 Canadian Survey on Disability conducted by Statistics Canada.

SUMMARY OF SURVEY COMMENTS: QUALITATIVE REPORT

Provided to the Accessible Technology Program (AT),
Department of Innovation, Science and Economic Development (ISED) by
the Canadian Council of the Blind

April 9, 2019

SUMMARY OF SURVEY COMMENTS: QUALITATIVE REPORT

QUESTIONS

Question 18 (158/453 Responses)

Is there anything else you would like to add to help us understand your experience with accessible and/or assistive technology?

Question 19 (154/453 Responses)

Is there anything else you would like to add to help us understand your experience in the workforce or trying to achieve employment?

METHODOLOGY

In order to provide substantive evidence and insight into the qualitative data provided by respondents on the open-ended questions (questions 18 and 19 of the survey), we first chose to organize and clean the data of any blank or irrelevant data (e.g. "No", "N/A", etc.). This meant that of the 453 survey answers provided, 125 responses were analyzed for question 18 (as there were 33 irrelevant answers and 295 respondents that didn't answer this question) and 120 responses were analyzed for question 19 (as there were 34 irrelevant answers and 299 respondents that didn't answer this question). Following the data-cleaning, it was decided that coding the data would be the best method to perceive or understand the patterns or prevalence of issues and practices that the respondents wanted addressed or promoted. Using a multi-pass descriptive coding approach where the codes to be used were proposed based on a short general summary of the responses and their intent, each response was reviewed three times – first to investigate for new codes, second to assign a code, and a third time to review the response in context, given the experience of coding all entries. The coding produced 19 codes ranging from 1 associated response up to 49 associated responses, with an average response per code of 11.4 on question 18 and 9.6 on question 19.

CODING LABELS

Understanding/Attitudinal Barriers

For people living with disabilities, discrimination, misperceptions, stigmas, and ignorance are a daily reality. As a result, it shouldn't be a surprise that these issues appear in the workplace and in relation to technology and respondents' use of it. It does, to some extent, then follow that this issue features predominantly within respondents' answers.

Access/Availability/Awareness

From transportation to the technology that allows the visually-impaired or blind to be independent and to participate fully in society, such as by working, having access to readily-available products and services that are well-known, easy to use, and within their means is something that respondents felt compelled to comment on.

Training/Skill-Building

One of the more popular codes was regarding people's ability to train, or obtain skills, typically related to technology. There were significant mentions of lack of, or long wait times for, one-on-one training and access to qualified training and instructors. It's very clear through the responses that this is something on everybody's mind, particularly as it relates to technology.

Policy/Legislation

There were multiple responses that talked about the rules, regulations, guidelines, etc. that exist or should exist. In particular, regulations pertaining to renewals or acquiring technology were a common sub-area within the respondents' answers and the Access/Availability/Awareness code.

Job Opportunities/Programs

Pertaining to employment and how technology can help, it's important to talk about the climate, in particular the opportunities and programs out there available to people. Numerous comments referenced this climate and lack of jobs.

Inaccessible Software

In a number of comments, there was specific reference to inaccessible interfaces or the implementation of inaccessible software (which makes sense since it's a tech survey) which showed that it made the most sense to group these together.

Independence

This was used when looking at responses that expressed the idea of independence, predominantly when it came to working with technologies and the ways in which they made the respondents more independent.

Accommodation

While perhaps one of the vaguest of the codes, this was predominantly used when looking at individual-specific accommodation and looking at the inclusive design principle of 'one-size-fits-one' rather than the over-used 'one-size-fits-all' approach, or the 80-20 rule spoken about at other events.

Government Leadership/Investment

This code spoke about the need for governments to invest resources into opportunities, innovations, and good practices, and the need for governments, as large institutions, to make sure that they use and promote the right practices.

Mentorship

This code was used when responses spoke of mentorship or community-based support.

Ability Recognition

This code was predominately used when looking at responses that spoke about the need to recognize one's own skills or when public recognition was inappropriately given or not given.

Community Cooperation and Information Sharing

In several responses, there was mention of community strengthening and coordination. This code was used for those types of responses.

Targeted Jobs

This code came from the desire for designated, targeted, or otherwise reserved job opportunities for the blind or visually-impaired community or the wider disability community. There was also some mention of jobs that required specific skills, owing to not-easily-corrected disadvantages.

Health Care Coverage Standardization

This code came from a few responses that spoke to health care coverage and in large part to the discrepancies across areas of health care.

Lack of Accessibility Thinking

This was brought about having seen a few responses that spoke more directly to discrimination in the sense of there being no real thought and no real movement towards change.

Job Requirement Standardization

It was mentioned that there are ways to use job specifications to discriminate and while perhaps not prevalent in the survey, it was determined to be noteworthy.

Drive/Persistence

It was mentioned, and it seems to be a reality for most, that it's critical to keep going even when there is adversity.

Examples

To provide some more specific examples of responses received, we've attached 10 clear examples of the diversity in feedback on a myriad of issues pertaining to technology and its place in the workplace. Quotes have not been edited for spelling or grammar.

"Assistive technology programs should focus on the client. First, to define and help pick what they need. At this age, I know what is working and what is not – if I had a say in what I could get I would save the government money rather than spending it on silly elements."

"Accessibility and assistive technology are very individualized. No two people

with the same disability are the same. Just like those who do not have disabilities, each person should be supported according to their needs."

"The use of AI to scan and read printed documents is essential but I don't know how AI can be used to interpret and read engineering drawings that are graphic in nature."

"Cost of assistive – adaptive - accessitive technology – hardware and apps are another great barrier, along with a lack of specialized training and consistent government funding for training and devices on an ongoing bases."

"No one should be left behind because they cannot afford to participate in society."

"One major obstacle is the lack of instruction manuals available online…"

"…the ADP process should be modernized and streamlined to facilitate this or some new system should be put in place to make relevant technology affordable and available."

"Technology should be more easily available equally across all provinces making a level playing field."

"…I possess many valuable communication skills and am unable to put them to good use in a work environment as I seem unable to succeed my foot in the door."

"For nearly everything I have difficulty with, I have 'smart' technology that supports."

RESULTS OF CODING

The results of coding are broken into two parts: the questions individually and the results of their combination. Of note is that in both questions, the most frequently-used code saw a significantly higher number of associated responses than the next most frequently-used code. Additionally, there tends to be clustering of the

data where we see a number of codes that have approximately the same amount of associated responses before 'jumping' or having a significant gap to the next most frequently-used code.

QUESTION 18

Of the 125 responses analyzed and coded, 16 of them were considered irrelevant.

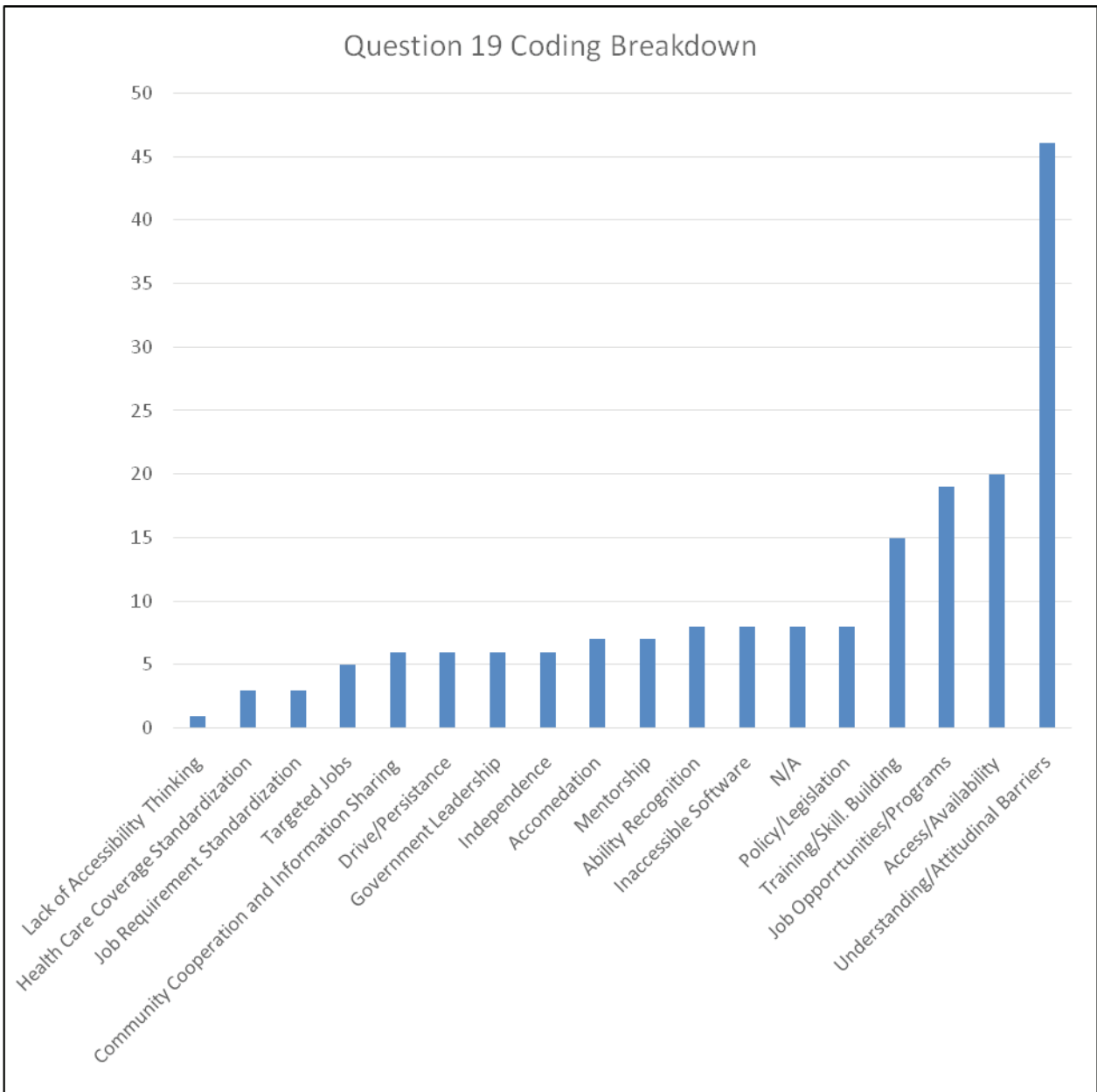| Theme/Keyword	Number of Responses
Health Care Coverage Standardization	2
Job Opportunities/Programs	2
Ability Recognition	2
Community Cooperation and Information Sharing	3
Targeted Jobs	3
Mentorship	6
Accommodation	7
Government Leadership/ Investment	8
Inaccessible Software	9
Independence	11
Policy/Legislation	14
Understanding/Attitudinal Barriers	25
Training/Skill-Building	28
Access/Availability/Awareness	49
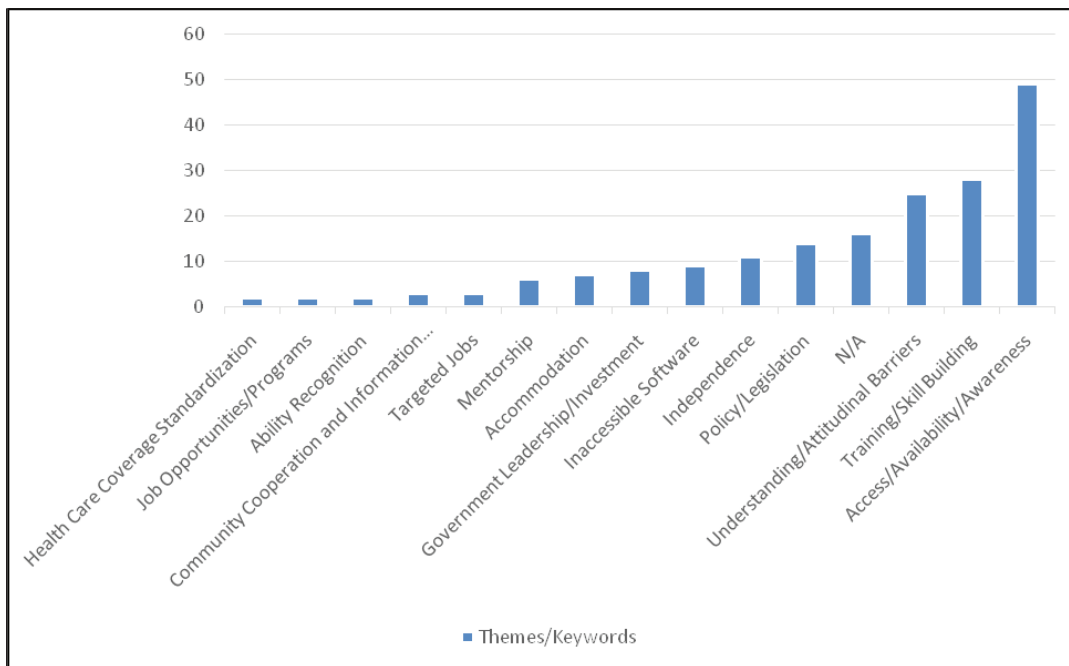
QUESTION 19

Of the 120 responses analyzed and coded, 8 of them were considered irrelevant.

| Theme/Keyword	Number of Responses
Lack of Accessibility Thinking	1
Health Care Coverage Standardization	3
Job Requirement Standardization	3
Targeted Jobs	5
Community Cooperation and Information Sharing	6
Drive/Persistence	6
Government Leadership	6
Independence	6
Accommodation	7
Mentorship	7
Ability Recognition	8
Inaccessible Software	8
Policy/Legislation	8
Training/Skill-Building	15
Job Opportunities/Programs	19
Access/Availability	20
Understanding/Attitudinal Barriers	46

Question 19 Coding Breakdown

COMBINED

In the combination of the two questions, the coding reveals that in many areas, the priorities that people identify are much the same. In the total combination, there were 24 responses that were analyzed but considered irrelevant.

Themes/Keywords	Number of Responses
Health Care Coverage Standardization	5
Targeted Jobs	8
Community Cooperation and Information Sharing	9
Ability Recognition	10
Mentorship	13
Government Leadership/Investment	14
Accommodation	14
Independence	17
Inaccessible Software	17
Job Opportunities/Programs	21
Policy/Legislation	22
Training/Skill-Building	43
Access/Availability/Awareness	69
Understanding/Attitudinal Barriers	71

**Combined (Q18 + Q19) Coding Breakdown**
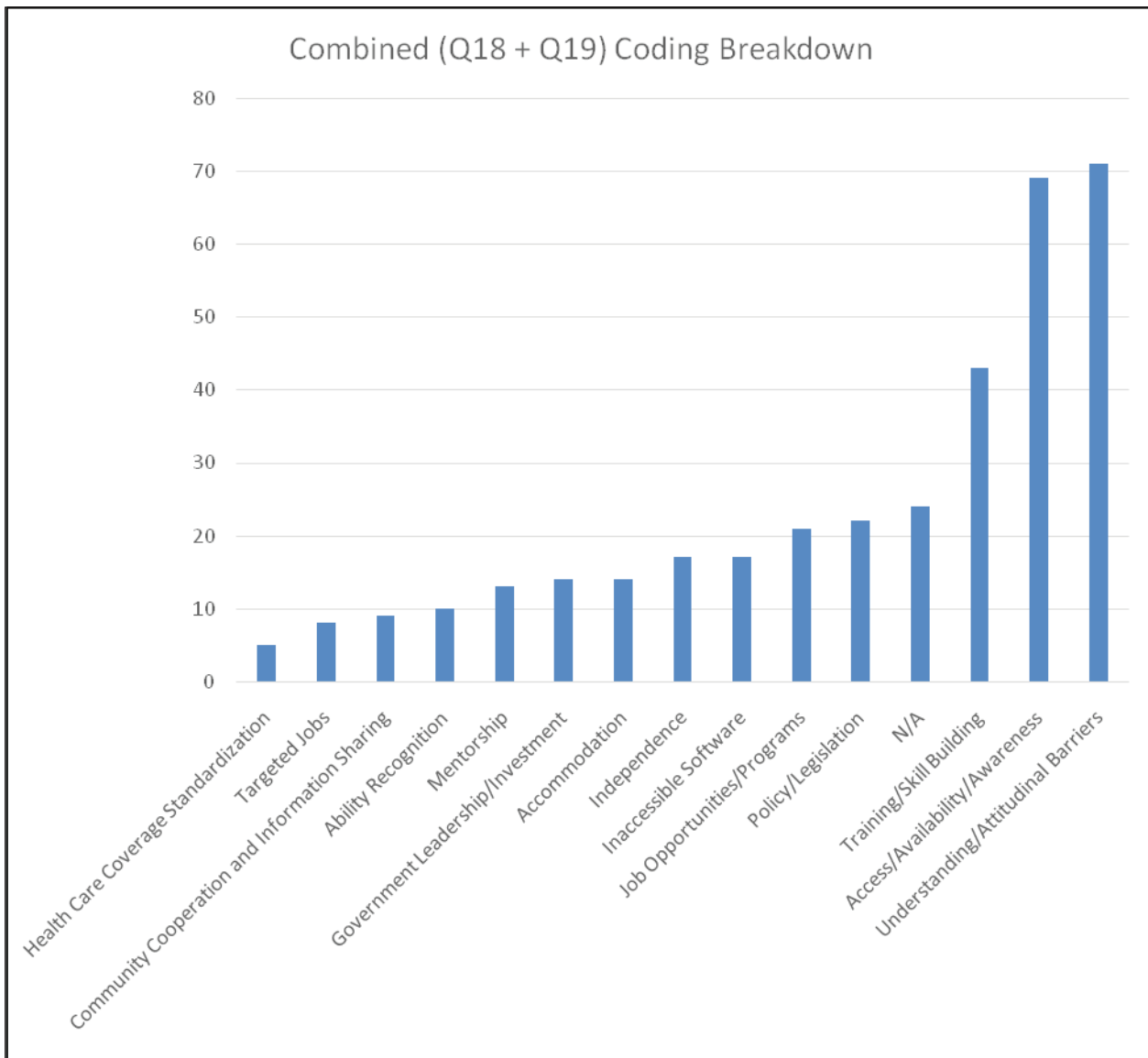
INTERPRETATION OF THE RESULTS

As an interpretation of the data presented earlier, it's apparent that education should be a priority – both in training the sight loss community in the use of technology, techniques, and tools that can help in their ability to work, live, and engage in modern society as well as in educating the public on the malaise, harm, and injustices caused by stereotypes, stigmas, and ignorance. Moreover, it is also clear that the access to, the availability of, and the awareness around these programs, the products they use or teach, and the means to be present at them (transportation, remote technologies, etc.) need to be heightened,

better-managed, and more blind- or visually-impaired friendly. To this end, it would be our recommendation that more investment be made into training and access programs that provide people who live with blindness or vision loss to have access to and to feel comfortable with the tools that would help them get employment, live more independently, and engage more actively in modern society. This includes selecting those programs that provide particular accommodations for requests, such as one-on-one training, access from remote communities, and other common requests of the blind and visually-impaired communities. Furthermore, we recommend that, as a measure in public education, we begin to train developers, managers, and other appropriate staff on how to consider accessibility in their day-to-day activities and particularly in the products they create. Therefore if there is to be change, it is our position that we recognize education starts from a young age, continues from there, and that the education system at large along with stakeholders and respected institutions with all levels of government remain the places where best to focus the sight loss community's energies and attention.
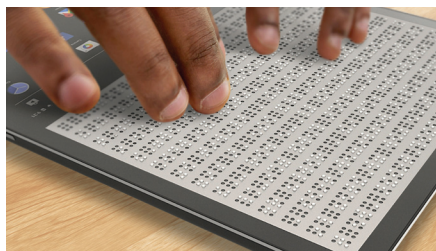
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