Meaningful Access: How *Bridge* Helps Reposition the Public Library as a Crucial Technology Enabler

Final Report

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Nordicity

Contents

Executive Summary

Toronto Public Library (TPL) commissioned Nordicity to undertake an analysis of the data collected through the beta phase of the ***Bridge*** **Technology Services Assessment Toolkit (*Bridge*)**.

This project focused on two primary outcomes and four secondary outcomes (enabled by the primary outcomes), as depicted below:

Primary Outcomes	Secondary Outcomes
Digital Inclusion	Community, Social and Civic engagement
Digital Literacy	Creativity and Innovation
	Workforce Development
	Entrepreneurship and Business Development

The main goals of this analysis were to understand and demonstrate the measurable effects of technology services at participating library systems and use the data to inform future decision-making.

A comprehensive data-based approach was proposed, and several discussions ensued between Nordicity and TPL over the course of this project. Key findings and insights from the *Bridge* analysis are discussed below:

Technology Services Available

- Technology services are grouped into three categories: *connectivity, equipment and software, digital literacy (one-on-one support and technology class)*.
- *Connectivity* was the technology service category that was reported to be the most used. **84% of respondents said they used WiFi Internet at a library** and 27% of the respondents accessed the Internet at a library workstation.
- The technology service categories *equipment and software*, and *digital literacy (one-on-one support and technology class)* were reported to be used less. Examples of these service categories include fabricating and manufacturing equipment, audio-visual production equipment, and technology classes in basic computer skills. These technology services by nature have a smaller user group as compared to the *connectivity* category.

Primary outcomes

- The primary outcomes studied were Digital Inclusion and Digital Literacy.
- Digital inclusion is critical in addressing the digital divide that faces vulnerable communities including low-income groups and teenagers (13-18). The library plays a key role in achieving this outcome by providing reliable and free access to the Internet at the library and outside of the library (after hours). In fact, over half (53%) of the respondents who accessed technology at the library did not have other means to access that technology For example, of those who responded to this question, 58% of people used the Internet while visiting the library.
- The availability of technology services at the library also help patrons build digital literacy skills and increase their competency and confidence in using digital technologies. Digital

literacy can increase access to opportunities that reduce societal and economic gaps[1]. About 80% of respondents indicated at least some increase in their levels of digital comfort.

Secondary outcomes

- Secondary outcomes are enabled by primary outcomes. They include Community, Social and Civic Engagement, Creativity and Innovation, Workforce Development and Entrepreneurship and Business Development.
- Community, Social and Civic Engagement outcome area: 78% of respondents found using the technology service(s) at the library helped them engage with their community; 80% of respondents reported that using the technology service(s) helped them connect with others to be more social, and more than one third (33%) of respondents reported using the technology service(s) at libraries to access government services or resources online.
- Creativity and Innovation outcome area: almost one third (26%) of the respondents used the technology service(s) at the library to make a creative product. Respondents who identified as First Nations (44%) and teenagers (13-18 age) (37%) were more likely than the overall base (26%) to use the technology services at the library for this purpose. 52% of respondents from the Ontario library service - North accessed the Internet at a library workstation for creating creative products and 19% of them accessed WiFi Internet outside the library (after hours) for this purpose. In comparison, only 5% of respondents from the Southern Ontario library systems (5%) accessed WiFi Internet outside the library (after hours) for making creative products.
- Workforce Development outcome area: more than half (59%) of respondents used technology service(s) at the library for educational activities. Younger patrons (13-24 years old) were more likely to use technology (81%) than the overall respondents (59%). The top three educational activities were *completing coursework or homework* (53%), *taking an online class or workshop* (31%) and *learning about a degree or certificate program* (30%). These results show that libraries serve as important access points to technology for students. Additionally, more than one third (34%) of the respondents used technology service(s) to develop employment skills. Among those who used the technology service(s) to develop skills related to finding a job, 46% were successful in finding a job. 62% among patrons identifying as a member of a First Nations community had a success in finding a job.
- Entrepreneurship and Business Development outcome area: technology services at public libraries play a key role in helping entrepreneurs and business owners establish, grow and/or manage their ventures. Among the respondents who used technology services at the library to perform business-related activities, more than half of them said they used the technology service(s) to perform business-related research (55%) and manage an existing business (51%).
- These secondary outcomes demonstrate the wide impact that public libraries have, and their potential for promoting socio-economic development by supporting community services and increasing social belonging, facilitating access to government services for vulnerable groups, supporting educational institutions and broader educational goals such as online certification access and e-learning for homework, and supporting the business

[1] As discussed in 2018 Technology Access in Public Libraries report by Nordicity for Toronto Public Library

sector by allowing patrons to seek potential clients online or perform business-related research.

Awareness and Needs for Technology Services

- The Patron Survey includes a question that asks about patrons' awareness of and interest in each type of technology service that they had not used. All technology service categories had patrons reporting that they had no awareness of them and but an interest in using them. This result suggests that marketing efforts may help increase patron awareness, usage and fit of technology services.
- More than one third of the respondents reported low levels of awareness but interest in using the technology services *access to Internet through a borrowed WiFi Hotspot* (31%) and *WiFi Internet access outside the library (after hours)* (34%).
- About one third of respondents did not know that the library offered one-on-one support and technology classes for programming and coding but expressed an interest in using them. This finding suggests that specialized services such as these are in demand but could be better promoted by the libraries that offer them.

Technology Support

- 60% of library systems reported that the staff were able to answer most or all the questions they were asked by patrons.
- The Staff Survey reveals that the library staff were asked a range of questions related to using technology services. For example, when asked about what types of questions that patrons asked staff, library systems reported that patrons asked questions about *technical issues* (e.g., service interruptions) (84%), about *equipment patrons would like to see made available* (68%), or about *trainer qualifications* (60%).
- When staff were asked what they would need to improve their ability to answer patron questions, *more training on the technology services we provide* is the option that was selected most often (78%).
- 55% of library systems reported that their staff provided one-on-one technology support to patrons and 46% of library systems reported that their staff had taught technology classes in the past month.

In sum, the results and findings in this report demonstrate that the technology services offered by libraries have positive social, economic and creative impacts across various demographic groups in Ontario. Equity-seeking groups particularly benefit from the technology services offered by public libraries. *Bridge* can help maximize these benefits by allowing library systems to collect data and conduct analysis, compare their services and performance to other library systems, draw insights, plan resources and implement improvements.

However, bringing insights together and scaling these impacts will require library systems to be better equipped with resources and digital tools for continuous improvement. For example, library systems will need usage monitoring software to keep track of service availability and usage. Libraries located in rural regions and those operating as a single-branch system are often limited in staff resources and will need additional support to harness their full potential for impact.

Sustainable funding will be critical to allowing libraries to fully benefit from *Bridge*. It is recommended that the provincial government consider including libraries in broader digital strategies and policies and increase funding to public libraries. This will allow libraries to strengthen and expand their critical role in providing connectivity and technology services, improving digital literacy and inclusion, and helping Ontarians succeed in the 21st century digital world.

1. Introduction

In July 2016, Toronto Public Library (TPL) engaged Nordicity to develop a suite of resources designed to support public libraries across Ontario in the provision of technology services. The outcome of this project was the ***Bridge* Technology Services Assessment Toolkit (*Bridge*)** – a software-based solution for gathering and analyzing data – for libraries to easily assess the need for technology services in their communities, measure the outcomes of the technology services they deliver, and benchmark those outcomes against their peers across the province. The *Bridge* toolkit is a patron-focused software using outcome feedback that measures patron benefits, availability and usage indicators that measure actual units of use, and staff feedback that provides insight on delivering the service.

The project also included a pilot implementation of *Bridge*, and the development of a report based on preliminary findings called *Technology Access in Public Libraries: Outcomes and Impacts for Ontario Communities.* Since the pilot, 50 library systems in Ontario have agreed to use *Bridge* and this study analyzed the data collected by them throughout 2019. This report provides a detailed look at the outcomes and impacts achieved by the participating libraries, as defined in the previous report.

1.1 Nordicity's Mandate

Nordicity was commissioned by Toronto Public Library (TPL) to report on the results of the beta phase of the *Bridge* project. This report is intended to:

- **Highlight and update key findings** supported by the *Bridge* project's implementation to date, particularly the patron outcomes that *Bridge* was designed to track.
- **Identify the extent to which the *Bridge* project has informed evidence-based decision making** in the use and availability of technology resources at libraries in Ontario; and
- **Outline a series of recommended actions** to increase the relevancy of the toolkit *Bridge* and the widespread adoption across the province.

1.2 Methodologies Used

Nordicity analyzed survey responses to questions collected in the Patron Survey, the Staff Survey and available data from Availability and Usage Indicators.

For the Patron Survey, the analysis is quantitative based on survey responses and qualitative based on text-based feedback. As per the outcome framework defined in the previous study, and described below in Section 2.2, each question was related to one or more outcomes in the framework. By analyzing the responses to the questions, Nordicity derived the outcomes detailed in this report. Using responses to the demographic-based questions, the team further explored outcomes as they differed for various groups.

Nordicity was provided with a dataset for each survey in a normalized form that the team then denormalized in order to combine the questions, options and responses into a flat dataset. For the Patron Survey, the team analyzed responses to each question on an overall basis, and then for each demographic group. This process yielded the charts and tables in this document.

For the Staff Survey, and the Availability and Usage Survey, the team first looked at the response rates in terms of number of responses in each month to each question. The response rate varied throughout the year and as such not all questions had enough responses to include in this document. For those questions that were reported on, it is important to note that given the small sample size, each additional response could significantly change the outcome.

2. About *Bridge*

The *Bridge* Technology Services Assessment Toolkit or *Bridge,* is a web-based solution for gathering and analyzing data for libraries to easily assess the need for technology services in their communities, measure the outcomes of the technology services they deliver, and benchmark those outcomes against their peers across the province. *Bridge* was implemented as the outcome of the *Technology Access in Public Libraries: Outcomes and Impacts for Ontario Communities* study published in 2018.

2.1 Measurement Objectives

Bridge was designed to be a customizable web-based application that can be used by library administrators to capture and analyze performance and outcome data on technology services. Using *Bridge*, library systems can measure:

- **Availability** – i.e. the volume of technology services offered, such as the number of Internet-enabled public workstations.
- **Usage** – i.e. uptake of technology services by library patrons, such as the number of participants in a technology training program.
- **Outcomes**- i.e. the kinds of activities and results that technology services have enable for library patrons.
- **Service delivery** i.e. gauge how prepared frontline staff are to deliver technology services such as their ability to answer technical and other questions about the technology services they support.

The library staff can use *Bridge* to view results, compare those results with previous months, or see how the library's performance compares with other Ontario public libraries using *Bridge*.

2.2 Outcome Framework

The **Outcome Framework** was designed to reflect how public libraries in Ontario benefit their communities by providing technology services. As depicted in Figure 1, the framework is two-tiered. The first two outcome areas- *Digital Inclusion* to technology and *Digital Literacy* skills training- are the primary outcomes of the technology services offered by public libraries.

Figure 1: Outcome Framework for technology services provided by public libraries

Primary Outcomes			
Digital Inclusion		Digital Literacy	
Secondary Outcomes			
Community, social and civic engagement	Creativity and innovation	Workforce development	Entrepreneurship and business development

Once these basic requirements for participation in today's digital world are met, technology services at public libraries unlock opportunities in many other areas, leading to secondary outcomes such as increased:

- **Community, social and civic engagement,** via increased community cohesion, and social and civic participation (e.g. access to government resources online) among Ontarians.

- **Creativity and innovation**, via development of creative and innovative content among Ontarians, enabling self-expression and engagement in a creative process.
- **Workforce development**, preparing jobseekers for Ontario's workforce and connecting them with employment by learning through technology and effectively enabling professional development opportunities, lifelong learning, learning and educational activities; and,
- **Entrepreneurship and business development**; by enabling Ontarians to start, manage and grow small businesses, which supports employment in the province.

2.3 Deployment After Pilot

Library systems represented in the project include libraries that serve Rural, Urban, Francophone, First Nations, Southern and Northern communities. Currently, the project supports 50 public library systems in Ontario that represent Ontario's public library network of 310 public library systems and 934 library branches.

- 25 Public Libraries in Southern Ontario Library Service
- 12 Public Libraries in Ontario Library Service North
- 4 First Nation libraries in Southern Ontario Library Service
- 5 First Nation libraries in Ontario Library Service North
- 4 Francophone libraries province-wide

The project aimed for a mix of libraries of varying resource capacities. Libraries were categorized by the size of the population served into three sections: Small (1-14,999), Medium (15,000-149,999) and Large (150,000+). Data collection began in two distinct cohorts: a first group of libraries that launched in Q1 2019, which were mostly large and medium-sized libraries in Southern Ontario, and a second cohort of libraries that launched in Q2/Q3 2019 that were mostly rural and small and medium-sized libraries in Northern Ontario.

By early April 2019, 50 library systems agreed to participate in the project, however not all libraries have been able to begin collecting data, and some small, rural and First Nation libraries have limited resources to collect full data in the project. 38 library systems collected Patron Survey data: 12 of them are Ontario Library Service – North, 26 of them are Southern Ontario Library service.

Due to the reduced participation from libraries as described above, the data collected restricted the analysis that could be conducted on:

- Technology services availability and related usage indicators
- Graphing outcomes over time

If more public libraries in Ontario were to participate in the project and collect data through *Bridge* over a longer period of time, it would enable a critical analysis of:

- whether patron outcomes vary across communities and if technology use and benefits change with time
- the benefit of collective impact as it relates to the results of the project
- operation efficiency improvement as current participation does not provide enough granularity in terms of understanding service levels and comparable benchmarks.

The following section describes the various data sources used in this study, and the extent and quality of the data collected.

3. Data Sources

The *Bridge* toolkit allows libraries to collect data from patrons and staff through the Patron Survey, the Staff Survey and the Availability and Usage Survey. The data from these surveys helps libraries draw a range of conclusions, with the Patron Survey demonstrating impacts of technology services, the Staff Survey demonstrating the support in use of technology services, and the Availability and Usage Indicators describing the metrics of the services offered.

3.1 Data Availability

Bridge project gained participation from 50 public library systems from across Ontario. 38 library systems collected data.[2] The *Bridge* Patron Survey has the highest participation from library systems, receiving over 25,000 responses. The table below provides a snapshot of the data available, and the sections below describe the availability in detail for each source.

Figure 2: Overview of *Bridge* data availability

Data source	# of Library Systems	Data Available
Patron Survey (*Bridge*)	38	~25,000 responses (Jan-Sept 2019)
Staff Survey (*Bridge*)	25	1 to 9 months of data (Jan-Sept 2019)
Availability and Usage Indicators (*Bridge*)	24	1 to 9 months of data (Jan-Sept 2019)

3.2 *Bridge* Data - Patron Survey

The Patron Survey provided the data for the primary and secondary outcomes described in this report. The survey includes questions about services used, learning, comfort with new technology, use of technology for creative and business uses, and other topics. It received over 25,000 usable responses from 38 library systems from January 2, 2019 to September 30, 2019. Not all patrons answered all of the questions, but they were included in the analysis if they answered even one.

The Southern Ontario Library Service (without Toronto Public Library) accounted for two-thirds (67%) of the responses. Toronto Public Library which constitutes an estimated 40% of the service population of the 50 participating libraries,[3] received over 30% of the total responses.

Table 1: Number of patron responses received aggregated by Library Service

Library Service	Number of Responses	Percent (%) of Total
Ontario Library Service - North	614	2%
Southern Ontario Library Service	16,936	67%
Toronto	7,720	31%
Total	25,207	100%

[2] 12 of the 50 library systems did not collect any data due limited resources. The list of the 12 library systems are in Appendix C.

[3] Sourced service population from 2018 Ontario Public Library Statistics for the participating libraries.

As mentioned in Section 3.3, some libraries have paused their participation in the project due to reduced resources. As a result, the response rate from small and rural libraries is low compared to public libraries.[4]

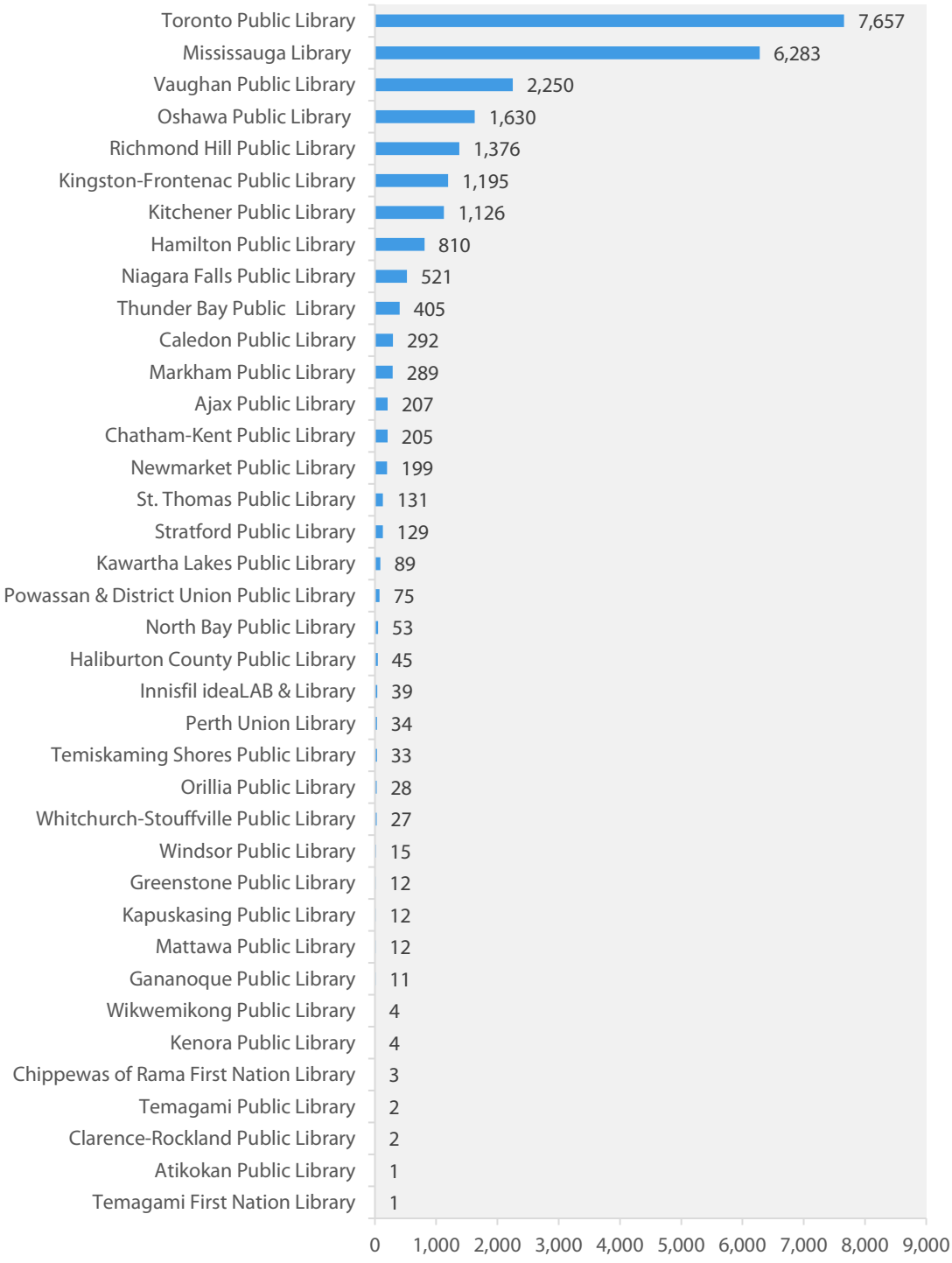
Table 2: Number of patron responses received aggregated by type of library

Type of Library	Number of Responses
First Nations	4
Francophone	67
Public	25,135
Total	25,207

The number of responses from each participating library system can be seen in the figure below.

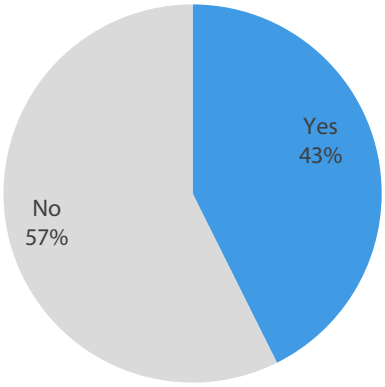
[4] In June 2019, public libraries experienced funding reductions to interlibrary loan service, which may have affected participation in collecting data in all four areas.

Figure 3: Library systems with at least one response to Patron Survey



In terms of the demographic groups among the patrons who were surveyed, 1.7% of the patrons identifying as First Nations community members. Visible minorities appear to be over-represented in the sample (30%) which could be due to higher library usage rates among patrons that identify as such. Almost half (43%) of the respondents identified as *low-income*, as seen in the figure below.

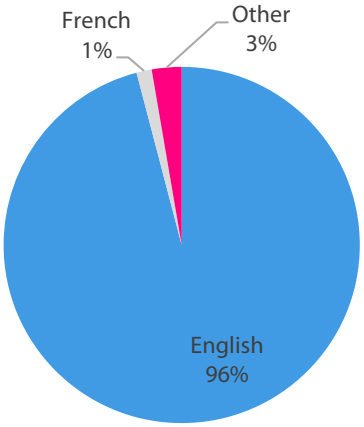
Figure 4: Patron Survey respondents identifying as "Low-income"



n = 8,243

In terms of languages, a large majority (96%) of respondents reported being comfortable in *English* and 3% reported most comfort in *other* languages.

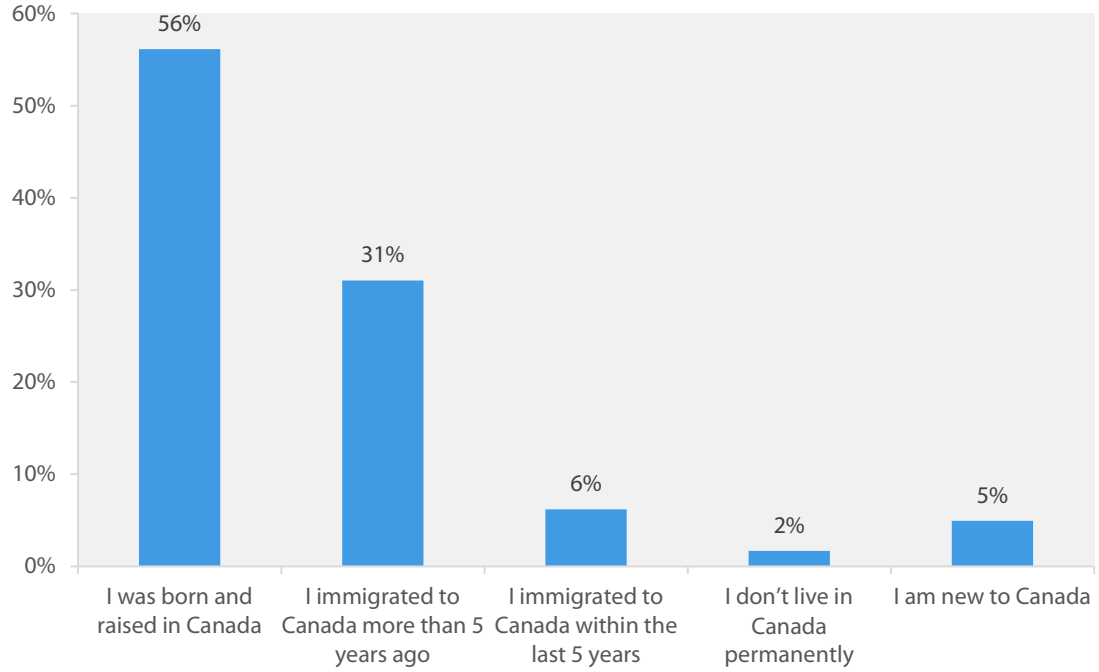
Figure 5: Language most comfortable with, as reported by Patron Survey respondents



n = 9,705

Almost half of the respondents indicated that they were born outside of Canada, as seen in the figure below.

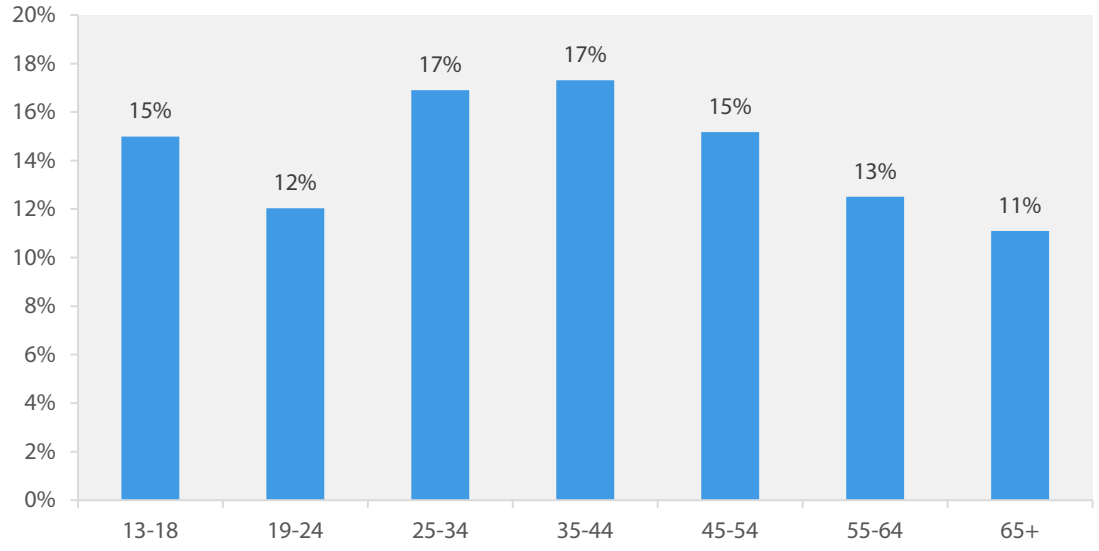
Figure 6: Immigrant status of Patron Survey respondents



n = 9,697

The study demonstrates that the library serves patrons of all ages, as seen in the figure below.

Figure 7: Patron Survey respondents grouped by age



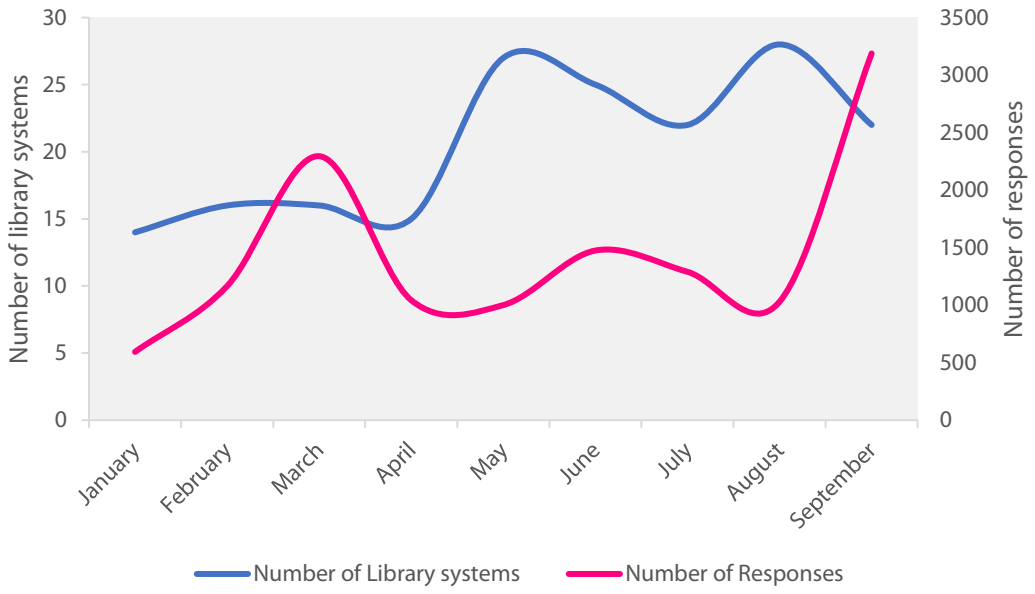
n = 24,951

In figure 4, 6 and 7, the results suggest that technology services offered at the library are used by a variety of demographic groups. These findings are similar to the research conducted by the Canadian

Centre for Policy Alternatives that suggests that library services are enjoyed by individuals from a wide range of social and economic backgrounds.[5]

The graph below shows the total number of responses collected each month and the number of libraries that participated in the survey each month. The date range of the survey collection is from January 2 to September 30 in 2019.

Figure 8: Number of library systems and total number of responses received to the Patron Survey every month



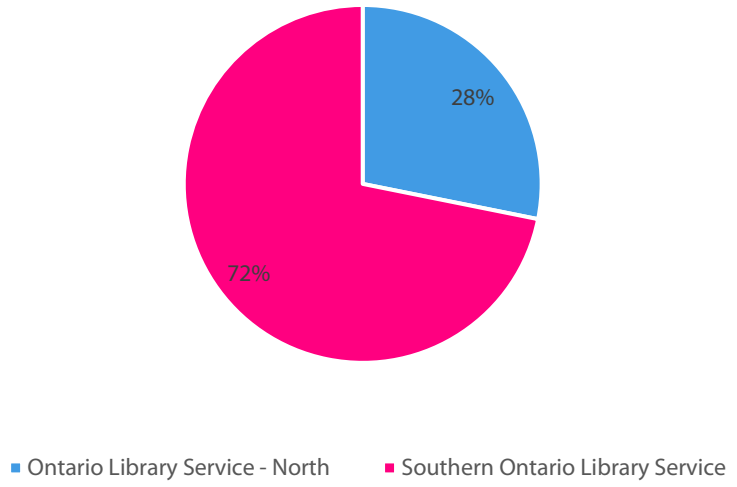
3.3 *Bridge* Data - Staff Survey

The Staff Survey collected data throughout the 9 months from January to September 2019. Although instructions were provided to collect data once each quarter, a specific date range for entry was not provided so each month received entries from participating library systems. Since January of 2019, 25 libraries have responded to this survey, albeit infrequently and inconsistently. As not all library systems have responded to all the questions in all the nine months, the data is not sufficient to analyze on a longitudinal and quarterly basis. Therefore, where possible, this data has been analyzed for the group as a whole. The potential for improvement is made as a recommendation in section 6.2

The Figure 9 shows that overall library services in the south have a higher volume of responses than the library services in the North. 4 libraries in the north received Staff Survey feedback in comparison to 21 libraries in the south.

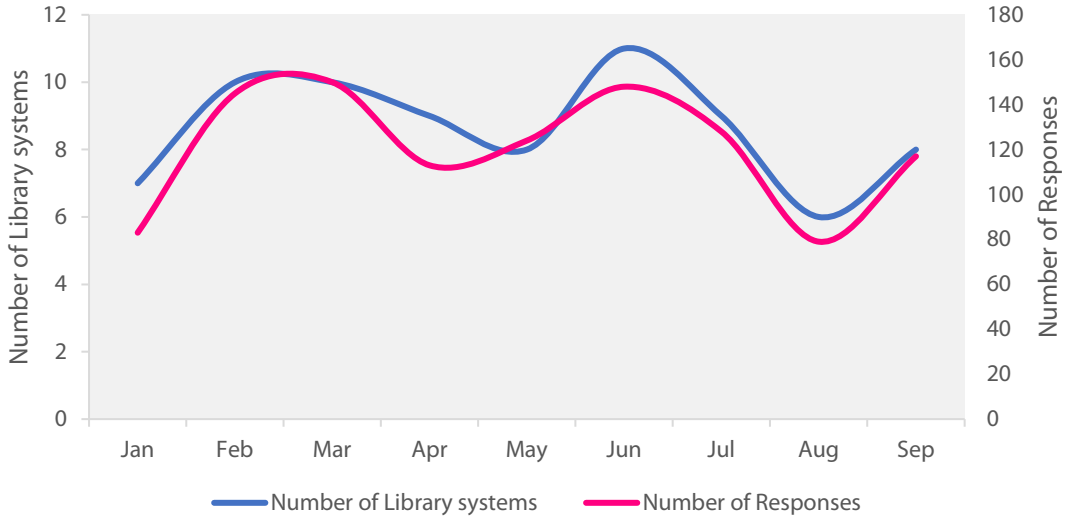
[5] Drawn from The Canadian Centre for Policy Alternatives https://www.policyalternatives.ca.

Figure 9: Total number of responses received to the Staff Survey



As seen in the figure below, the number of library systems responding to the survey varied throughout the year and in no month did all library systems respond. This limited the analysis of technology support available across regions and over time.

Figure 10: Number of library systems and total number of responses received to the Staff Survey every month



To encourage participation particularly from libraries in the Northern Service, the survey could be modified to take up less staff time, either by changing and reducing questions, or reducing the frequency of data collection, or both.

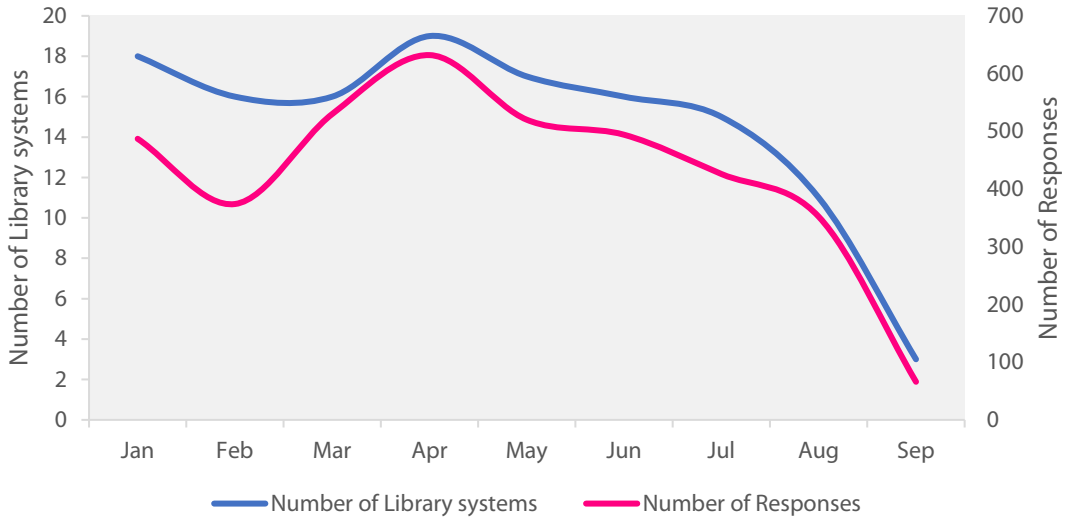
3.4 *Bridge* Data - Availability and Usage Indicators

The Availability and Usage Indicators have questions that are designed to measure the availability and usage of technology services offered by libraries. Availability is the volume of technology services offered. For example, the availability indicators for off-site access to Internet are the number of WiFi hotspots, the maximum lending period and the bandwidth. The usage is the uptake of technology services by patrons, such as the average number of users on waitlist for available devices.

Currently, the indicators track the volume of technology services offered by library systems, and the uptake of technology services by patrons, but they do not make informative results due to the need for greater participation, standardized collecting frequency, standard definition of each indicator and tools of capturing those indicators.

In all, 24 library systems responded to the survey but not every month. As seen in the figure below, participation declined through the year, signifying the need for a leaner survey schedule. As such, the data collected could not be analyzed for quarterly trends over the nine-month period.

Figure 11: Number of library systems and total number of responses received to the Availability and Usage survey every month[6]



3.5 Scope of Analysis

Of the three data sources, the Patron Survey has the highest participation from libraries, as previously mentioned. While 38 library systems have received responses to the Patron Survey, 20 of them provided data to all three (i.e., the Patron, the Staff, and Availability and Usage surveys). An overlap between the three datasets would have made it possible to draw relationships between outcomes, and the services and support available. For example, are Digital Literacy outcomes stronger in part due to the increased availability of Internet-enabled workstations, or increased staff knowledge? Additionally, only 11 library systems have data from all three *Bridge* sources, limiting the holistic

[6] One given data point (whether it is availability or usage indicator) reported is counted as a response.

analysis that may have led to insights about variance in technology resources and services across libraries of different sizes, in different regions.

Considering the change in the composition of the pool of *Bridge* participants, comparing the pilot outcomes with current results may not accurately represent the change in outcomes. Only four library systems had Patron Survey responses that could be compared to 2015 (Toronto Public Library, Kitchener, Perth Union Library, and Innisfil ideaLAB & Library), limiting the longitudinal analysis from pilot to beta.

Overall, there is limited data for Francophone libraries, libraries part of the Ontario Library Service - North, and First Nations libraries (across Northern and Southern regions). Given that the service region of Ontario Library Service - North is home to 104 of the 134 First Nations communities in Ontario and 29% of Ontario's Francophone population, their participation is key to having data that is representative of all libraries in Ontario.

3.6 Data Limitations

The comprehensiveness of such a report is largely dependent on the data quantity and quality collected. The lack of consistent Availability and Usage Survey and Staff Survey responses prevented the development of more granular and accurate results. The lack of consistency in definitions in the Availability and Usage Survey makes it difficult to connect services uptake and usage.

As noted in Section 3.4, participation in Availability and Usage Indicators reporting frequency declined through the year. The Availability and Usage Indicators can be collected on a less frequent basis, such as a quarterly report during a range of set dates in certain months. In addition, various degrees of data accessibility among library systems and different technology standards posed a limitation on data collection. For example, certain metrics such as bandwidth need a common set of evaluation criteria to measure success. It is recommended that a manual with means to collect availability and usage data and standard definitions of each term is developed.

It is worth noting that the results are likely to be influenced by where the user has access to the survey. For example, the survey was promoted through WiFi, computer logins and webpages in most libraries.

4. Findings from the Beta Phase

This section describes the primary and secondary outcomes derived from analyzing data from the *Bridge* Patron Survey, Staff Survey and limited results from the Availability and Usage Indicators.

4.1 Technology Services Available

Libraries participating in *Bridge* provide a range of technology services that are sorted into three categories: *connectivity*, *equipment and facilities*, and *digital literacy (one-on-one support and technology class)*.

The *connectivity* service category includes technology services such as onsite Internet access and off-site Internet access. The *equipment and facilities* category includes laptops, software, 3D printers, etc. The *digital literacy (one-on-one support and technology class)* category includes one-on-one support and technology classes on basic computer skills, programming, social media, etc.

The Patron Survey first asked which technology services the patron had used within the month. Based on the services they reported having used, patrons were then asked questions about the outcomes that resulted from using these technology services which section 4.2 and section 4.3 will illustrate in detail.

A total of 13,060 patrons reported having used the technology services in the month the survey was completed. All technology services were reportedly being used, showcasing the different needs of patrons from WiFi Internet access to one-on-one support of digital design.

As shown in Figure 12, *connectivity* is the technology service category that has the most reported use. 84% of respondents said they used *WiFi Internet access at the library* and 28% of the respondents used a library workstation to access Internet.

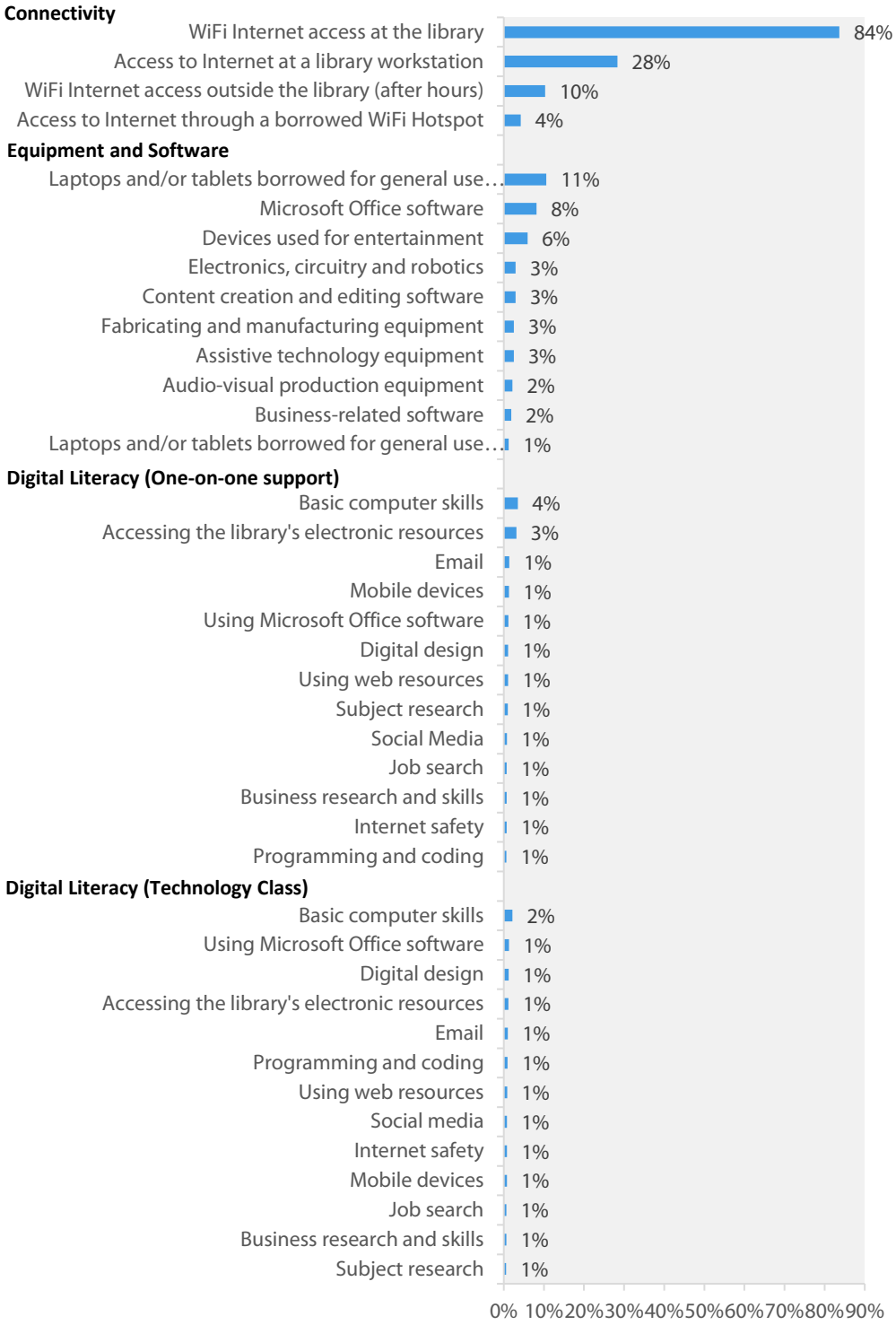
In the *equipment and software* service category, 11% of the respondents answered *Borrowing laptops and/or tablets*, and 6% of respondents answered *Microsoft Office software*. Other specialty technologies such as *devices used for entertainment* and *fabricating and manufacturing equipment* all have at least 1% of reported use.

In the *digital literacy (one-on-one support and technology class)* service category, 4% of the respondents used one-on-one support for basic computer skills and 3% of the respondents used technology classes for basic computer skills. All other types of digital literacy *(one-on-one support and technology class)* service such as accessing the library's electronic resources and using Microsoft Office software have at least 1% of responses rate.

It is worth noting that lower reported use of specific technology services does not necessarily reflect the utility of them. For example, *assistive technology equipment* was reported to be used by only 3% of respondents. This technology, however, provides a specialized service to individual patrons with unique requirements who may otherwise not have access to the technology. In comparison, *WiFi Internet access* does not have the same specialized capability despite having a higher percentage of reported use.

Figure 12: Technology services used by respondents

Survey question: Which of the following services have you used in (the month in which the survey was completed)



n =13,060

4.2 Primary Outcomes

Increasing Digital Inclusion and Digital Literacy among Ontarians were the two primary outcome areas related to the provision of technology services at Ontario public libraries. The impacts of those two primary outcomes includes increased access to and skills in core and/or emerging technologies such as Internet connection and fabricating and manufacturing equipment.

The Bridge Patron Survey asked mandatory and voluntary demographic questions. This report treats each question differently and includes general survey results as well as demographic results for questions that have sufficient data and are relevant to the outcome that question is designed for.

Overall, the survey results in this section showed measurable outcomes and impacts. The *Bridge* results showed public libraries contribute to bridging the digital divide by increasing access to technology services. For several demographic groups including low-income communities, immigrants, and First Nations communities, Ontario libraries enabled their access to essential economic, social and/or civic participation and meaningful connection to the digital world.

4.2.1 Digital Inclusion

Digital Inclusion among Ontarians was identified as one of the primary outcome areas related to the provision of technology services at Ontario public libraries. Access to core services, such as an Internet connection and basic technology equipment is an essential requirement for economic, social and/or civic participation, and public libraries contribute to bridging the digital divide through the provision of these.

The key performance indicators related to Digital Inclusion are:

- Access to technology by patrons without alternative means of access, and reasons for using technology at the library for patrons with alternative means of access; and,
- Use of technology service(s) with or on behalf of someone else (e.g., parents, children, elderly person, etc.).

All technology services in connectivity, equipment and software, and digital literacy (one-on-one support and technology class) link to the Digital Inclusion outcome area (Appendix A)

53% of respondents said that the public library was their only point of access to the technology service(s) that they used

Access to Technology

Figure 13 showed that 53% of respondents said that the public library was their only point of access to the technology service(s) that they used, as illustrated in the figure below. 62% of the respondents aged 65 years or older get access to technology services which they would not have otherwise had access to. Patrons who identified as low-income and/or a member of a First Nations community were more likely to find that the library services gave them access to technology that they would otherwise not have had access to, with 62% and 64% reporting that this was the case respectively. This data

shows that libraries have a positive impact on bridging the technology access gap especially in equity-seeking groups.

Figure 13: Access to technology

Survey question: Did the service(s) you used give you access to technology you would not have otherwise had access to?

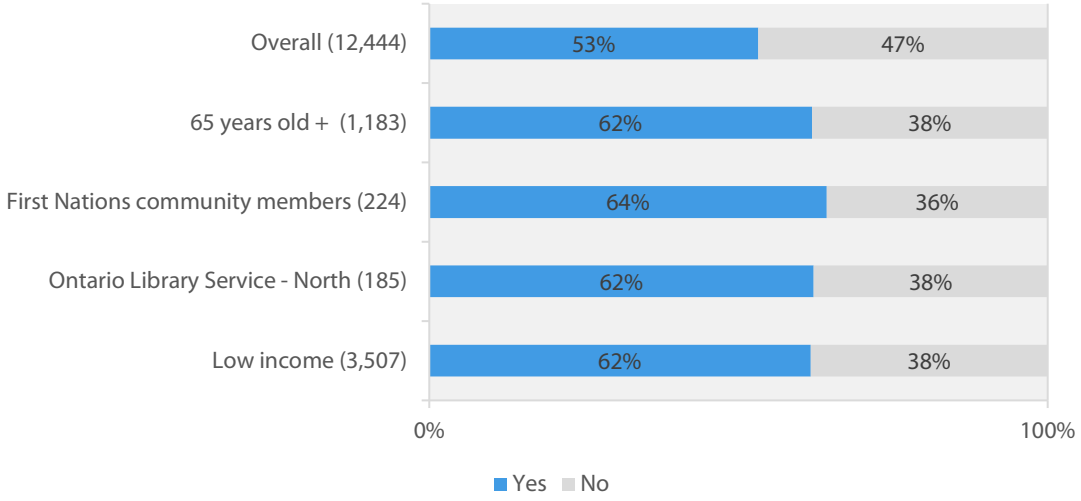


Figure 14 shows that among the 53% respondents who used technology service(s) at the library (who would not have otherwise had access), 71% of them got access to the Internet through WiFi and 27% of them got access to the Internet through an Internet-enabled workstation. The figure also shows that libraries contribute greatly to patron access to technology especially among seniors (65 and older) and patrons identifying as a visible minority and/or a First Nations community member.

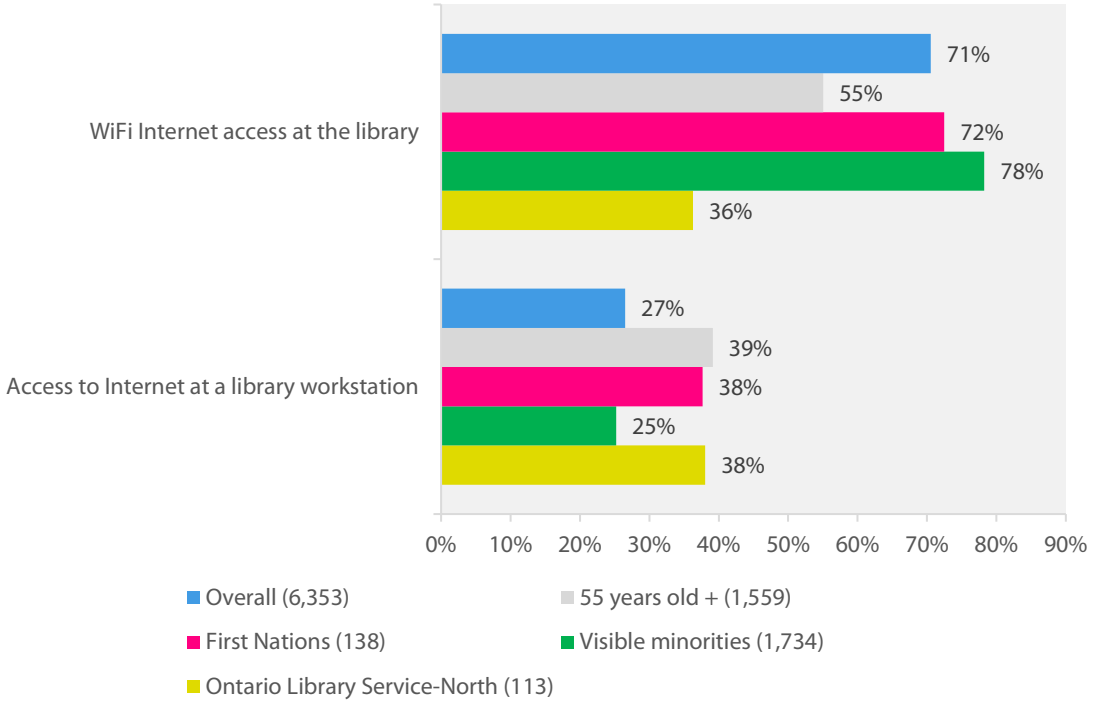
Figure 14 also shows that among the respondents who used technology service(s) at the library without an alternate point of access, 36% of the respondents from libraries in Ontario library Services – North benefited from WiFi Internet access at the library and 38% of them got access to Internet from workstations. This suggests an opportunity to support Northern Libraries infrastructure as more patrons can benefit from accessing the WiFi at the library and the many opportunities it brings. With Ontario government's Northern Broadband project initiative, the library will play a key role in providing Internet access points to more people.

Similarly, respondents identifying as visible minorities, or First Nations community members were also more likely than the overall response base to benefit from accessing the library's WiFi services without an alternate means of access. Among those respondents who gained access to technology without other means, 72% of visible minorities respondents and 78% of respondents identifying as

The library contributes greatly to technology access, especially among younger patrons (13-24 years old), seniors (65 years old +) and patrons identifying as a visible minority and/or a First Nations community member

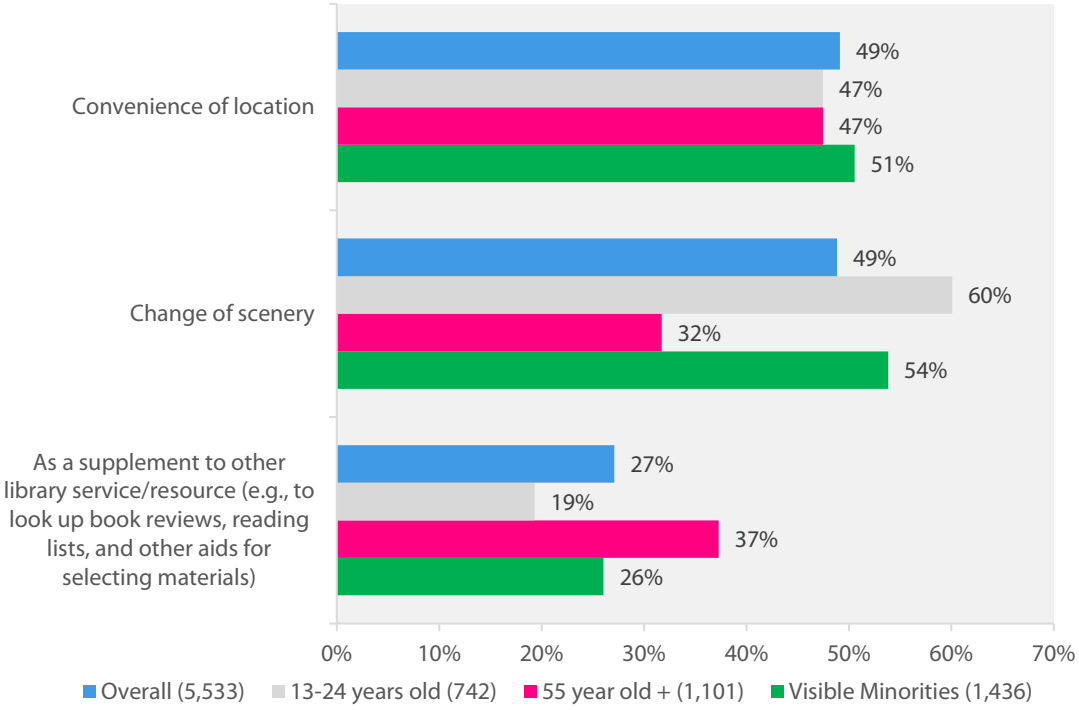
First Nations said the library provided them Internet access through WiFi. Conversely, older patrons are most likely to be accessing Internet a library workstation compared to other demographic groups.

Figure 14: Technology Services contributing to Increased Access to Technology
Survey question: Survey question: If yes, which service(s)? (follow up to "yes" responses from Figure 13)



For those patrons with alternate access to the technology, the two most important reasons for them to use library services were *convenience of location* and *change of scenery*. Both reasons had a 49% response rate as shown in the figure below. Younger patrons (13-24 years old) and visible minorities patrons were more likely than the overall base to be using technology services at the library for a *change of scenery*. More than half of the respondents in both demographic groups selected *change of scenery* as their reason to use the services at the library. Older patrons were almost twice as likely (37%) than younger patrons to use technology services as a supplement to other library resources.

Figure 15: Reasons for use of Technology Services at library in case of availability of alternate access
Survey question: If not, what are the most important reasons why you decided to use the service(s) at the library?



As shown in the figure below, 21% of respondents reported using technology service(s) with or on behalf of others.

Use of Technology Service(s)

Figure 16: Use of Technology Service(s) with or on behalf of others
Survey question: Did you use the technology service(s) with or on behalf of someone else?

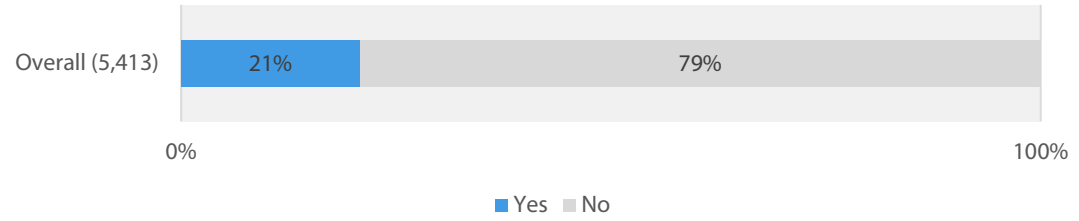
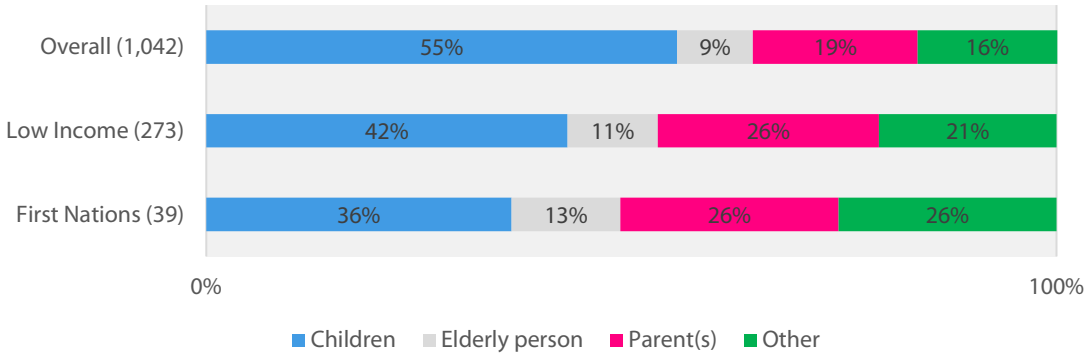


Figure 17 shows that the patrons who use services with or on behalf of others are most likely to do so with or for children. The result likely shows that parents use the library's technology service(s) to introduce children to technologies, implying an educational benefit of a public library.

Figure 17: Individuals with/on behalf of whom technology services were used

Survey question: If so, with/for whom? (follow-up to "yes" responses presented in Figure 16)



Figures may not add to 100% due to rounding

4.2.2 Digital Literacy

Increasing Digital Literacy among Ontarians was identified as the second primary outcome area related to the provision of technology services. Digital Literacy, defined as having the skills necessary to leverage core and/or emerging technologies, effectively use digital tools, and critically evaluate digital information, is a requirement to meaningful participation and connection in the digital world. In addition to providing access to the technology itself, libraries across Ontario offer a wide range of structured and semi-structured training as well as individual support to patrons at all levels of digital competence.

The key performance indicators related to Digital Literacy are:

- Increased digital comfort gained as a result of using technology service(s) at the library,
- Introduction to new technologies, and
- The adoption and continued use of those technologies.

All technology services contribute to the Digital Literacy outcome area, in particular technology services in *equipment and software*, and *digital literacy (one-on-one support and technology class)* category (Appendix A).

Increased Digital Comfort

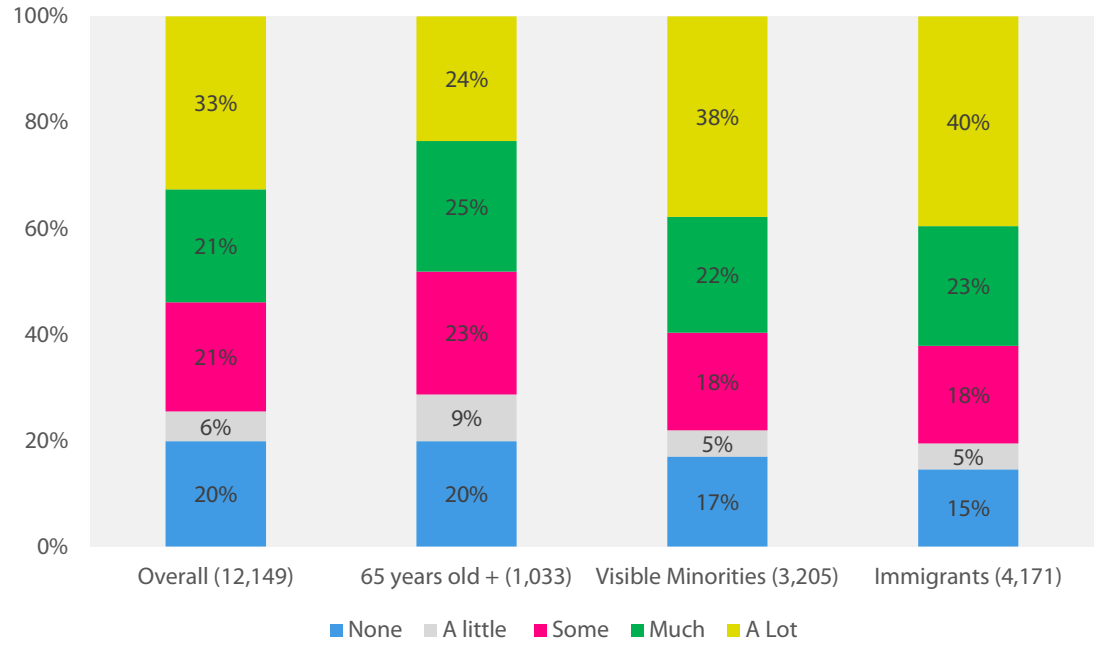
In the survey, patrons were asked about the increase in their comfort level with digital technologies after using the library's technology service(s). The figure below shows that patrons reported high levels of comfort, with 80% of respondents indicating at least some increase in their level of digital

80% of respondents indicated at least some increase in their level of digital comfort. Immigrants are more likely to be a lot more comfortable in using digital technologies than they were before.

comfort. Immigrants were most likely to become "a lot more comfortable" using digital technologies than they were before using the library's technology service(s).

Figure 18: Increase in Digital Comfort

Survey question: How much more comfortable are you in using digital technologies than you were before using the library's technology service(s)?



Figures may not add to 100% due to rounding

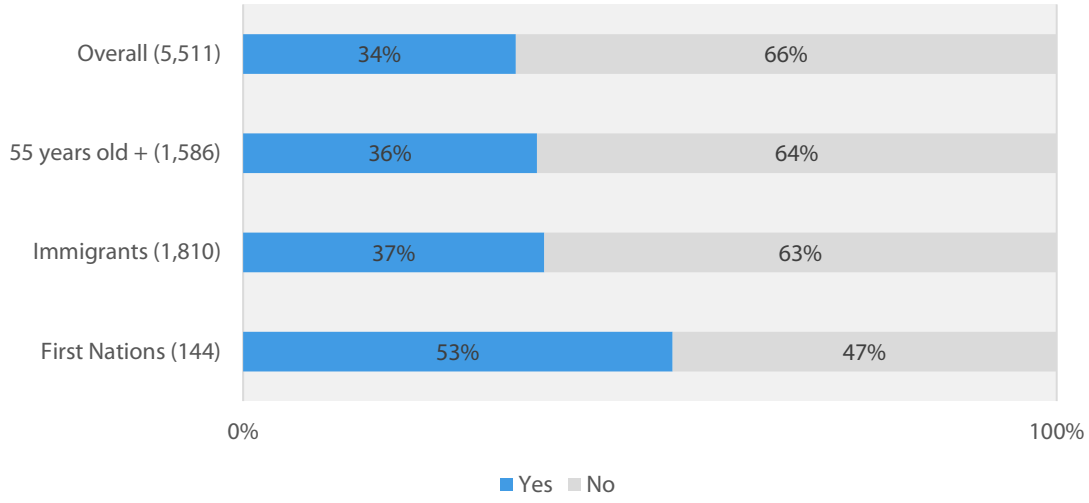
Introduction to New Technologies

As shown in the figure below, over a third (34%) of the respondents reported being introduced to new technologies using technology services offered by the libraries. Notably, 53% of patrons who identified as First Nation people got access to new technologies using services at the library. This result shows that public libraries in Ontario make a significant contribution to bridging the gap in Digital Literacy, particularly for members of First Nations communities[7].

[7] Half of the respondents identified as First Nation people are reported from Mississauga library system and Toronto Public Library system

Figure 19: New Technology Adoption

Survey questions: Did any of the services you used introduce you to new technologies?

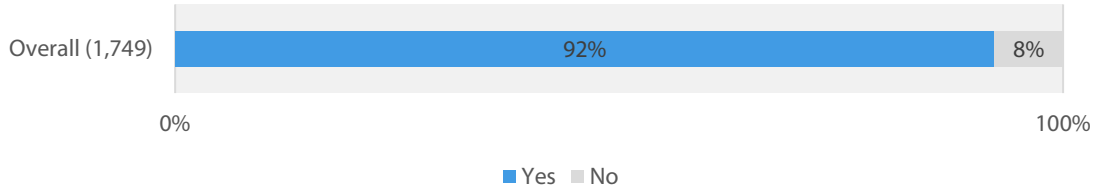


The adoption and continued use of those technologies

92% of the respondents who accessed new technologies through the library say they will continue to use that technology (Figure 20).

Figure 20: Continued use of technology

Survey question: If so, do you continue to use that technology? (follow-up question to "yes" responses presented in Figure 30)



4.3 Secondary Outcomes

As illustrated in the previous section, the primary outcome areas of Digital Inclusion and Digital Literacy enable individuals to gain access to use and understand technology. The impacts of those two primary outcomes also lead to more diverse outcomes, such as wider engagement with the community and public society and being able to create or make decisions using digital technology. *Bridge* measures four secondary outcomes: **Community, Social and Civic Engagement, Creativity and Innovation, Workforce Development,** and **Entrepreneurship and Business Development**.

Overall, the survey questions in this section showed positive evidence of diverse impacts achieved through technology services in terms of community, social and civic engagement, creativity and innovation, workforce development, and entrepreneurship and business development. Libraries connect with patrons in different demographics at different points of need, whether it is teenager from a low-income family needing a laptop for homework or a recent immigrant seeking to gain

employable skills to successfully land jobs. The diverse communities that use technology at the library indicate the importance of digital literacy class and support on a variety of topics that meet the needs of broad range of users with varying abilities.

4.3.1 Community, Social and Civic Engagement

Libraries provide a range of services that enable patrons to engage with their friends, family, community and governments. The key performance indicators related to Community, Social and Civic Engagement are:

- Increased community engagement.
- Increased social belonging; and,
- Access to government resources online.

The technology services that contribute to all the **Community, Social and Civic Engagement** KPIs were (Appendix A):

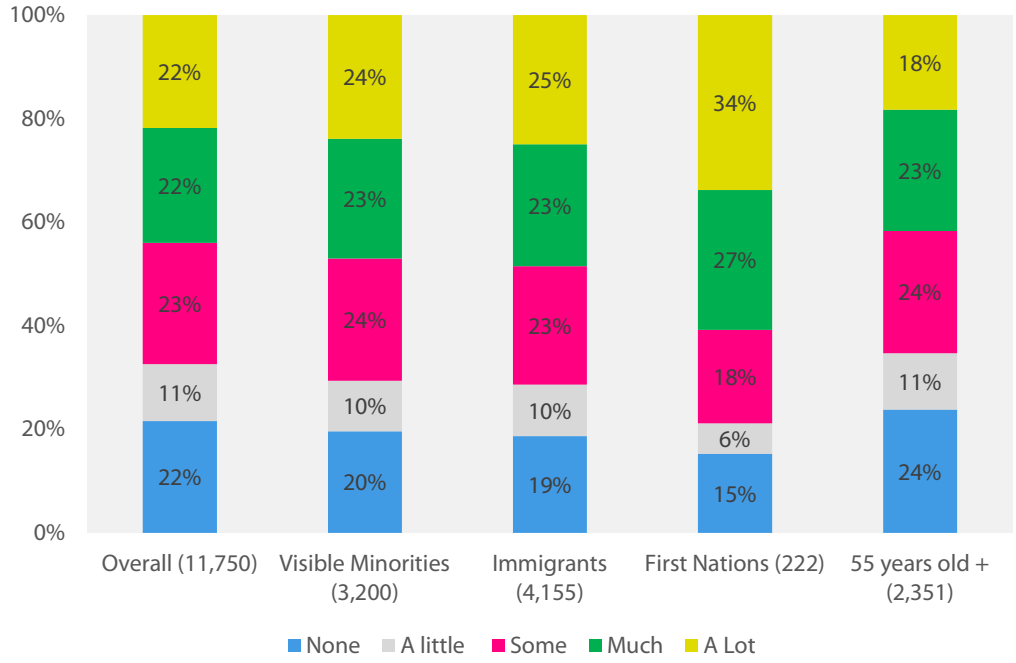
- WiFi Internet access at the library
- WiFi Internet access outside of the library (after hours)
- Access to Internet at a library workstation
- Access to Internet through a borrowed WiFi Hotspot
- Laptops and/or tablets borrowed for general use (at the library or for use outside the library)
- Devices used for entertainment (not applicable to the use of technology with or on behalf of others)
- Assistive technology equipment
- Digital literacy (one-on-one support and technology class) on Email, Microsoft Office software, social media, using web resources, etc.

Increased Community Engagement

The survey asked patrons who had used one or more of the services related to the Community Engagement KPI. As shown in the figure below, 78% of respondents find using the technology service(s)at the library helped them engage with their community. Among the patrons who identified as First Nations, 34% of them found it helped them a lot and 27% of them found it helped them a fair amount.

Figure 21: Community engagement

Survey question: How has using the technology service(s) helped you engage with your community?

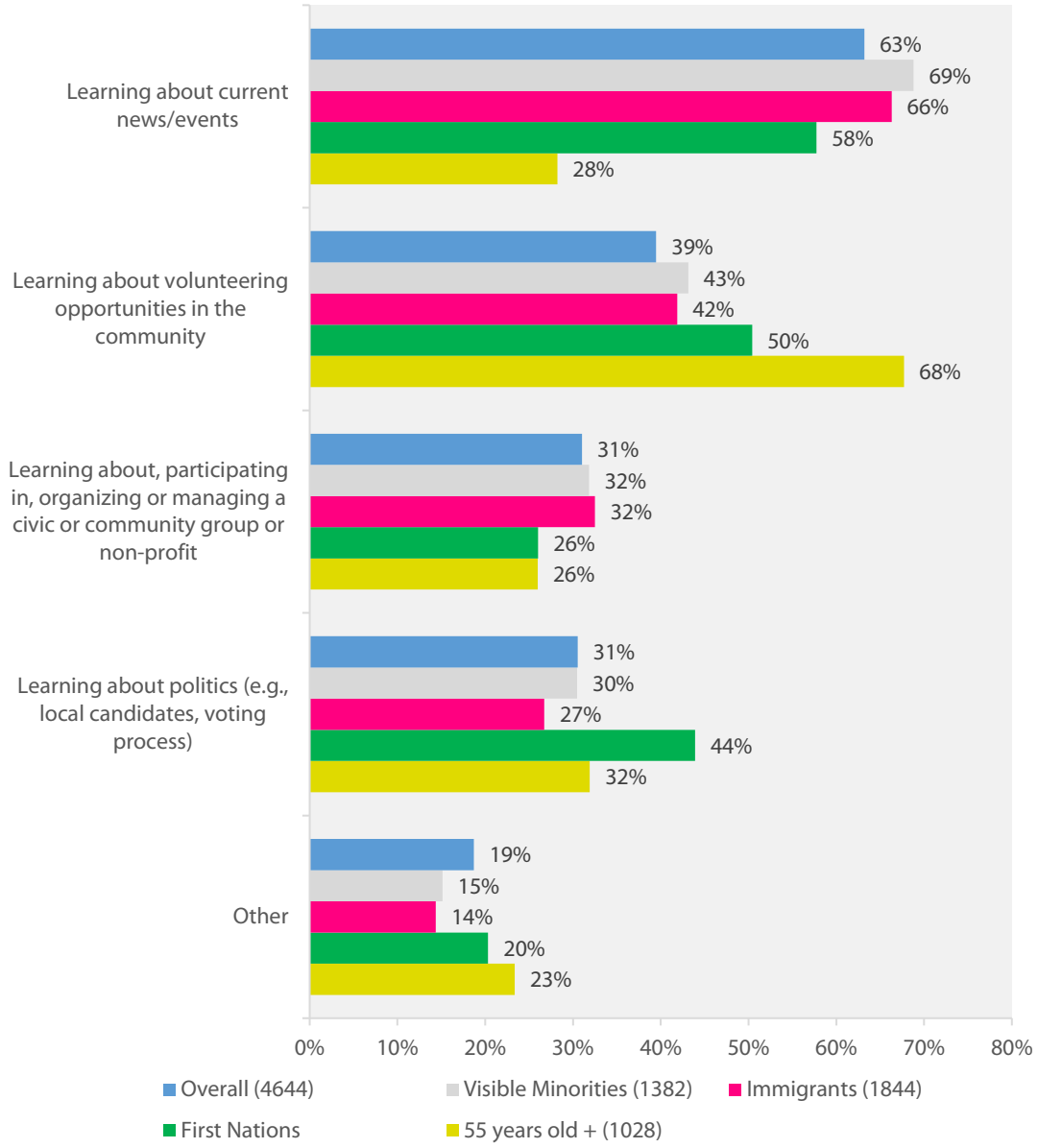


Figures may not add to 100% due to rounding

When asked about the activities that contributed to their increased engagement with the community, the majority (63%) of overall respondents used library service(s) to learn about current news/events (Figure 22); 39% of respondents used library service(s) to learn about volunteering activities; More than one third (31%) of respondents had activities in learning about, participating in, organizing or managing a civic or community group, and learning about politics. As shown in Figure 22, for people who are 55 of age or older, learning about volunteering opportunities was the most common activity that contributed towards increased engagement with the community. 69% of respondents who identified as visible minorities increased community engagement by learning about current news/events through technology services provided by the library. These results demonstrate that in addition to the traditional community building services that libraries provide (e.g. community programs and space), providing technology services and support effectively enable a myriad of other community benefits as well.

Figure 22: Activities contributing to increased community engagement

Survey question: What activities contributed most to you increased engagement with your community? (follow-up to responses presented in Figure 21)



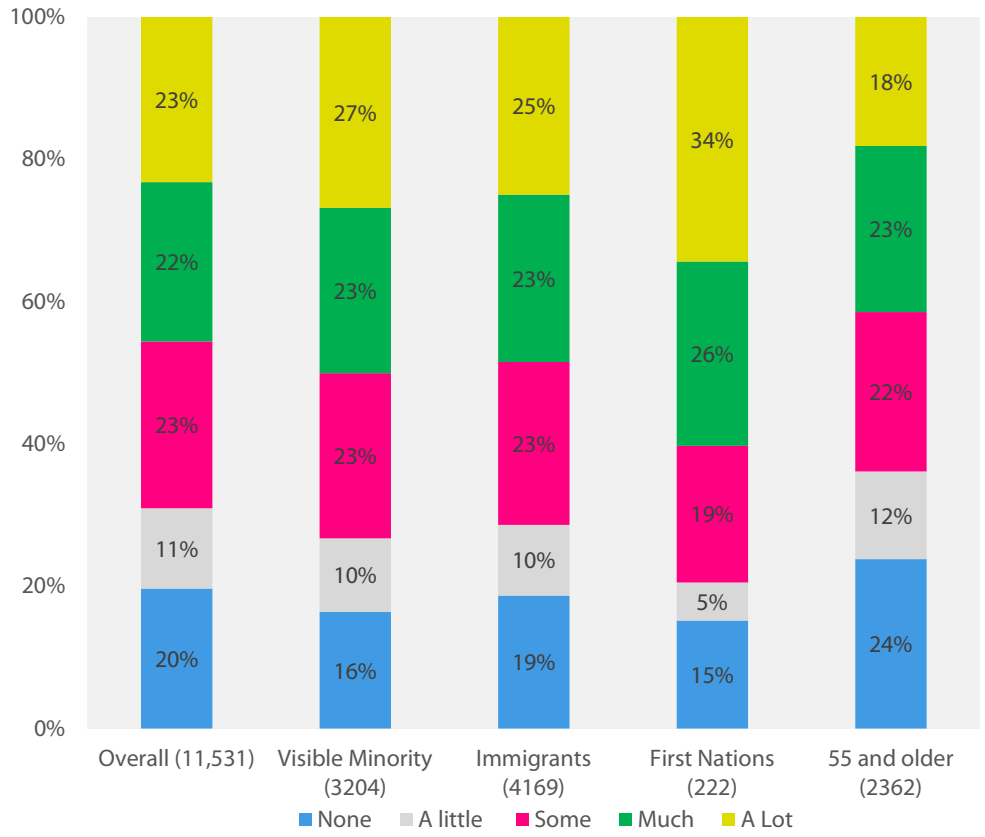
Increased Social Engagement

The figure below shows that 80% of respondents reported that using the technology service(s) helped them connect with others to be more social.

80% of respondents reported that using the technology service(s) helped them connect with others to be more social.

Figure 23: Social engagement

Survey question: How has using the technology service(s) helped you connect with others and be more social?

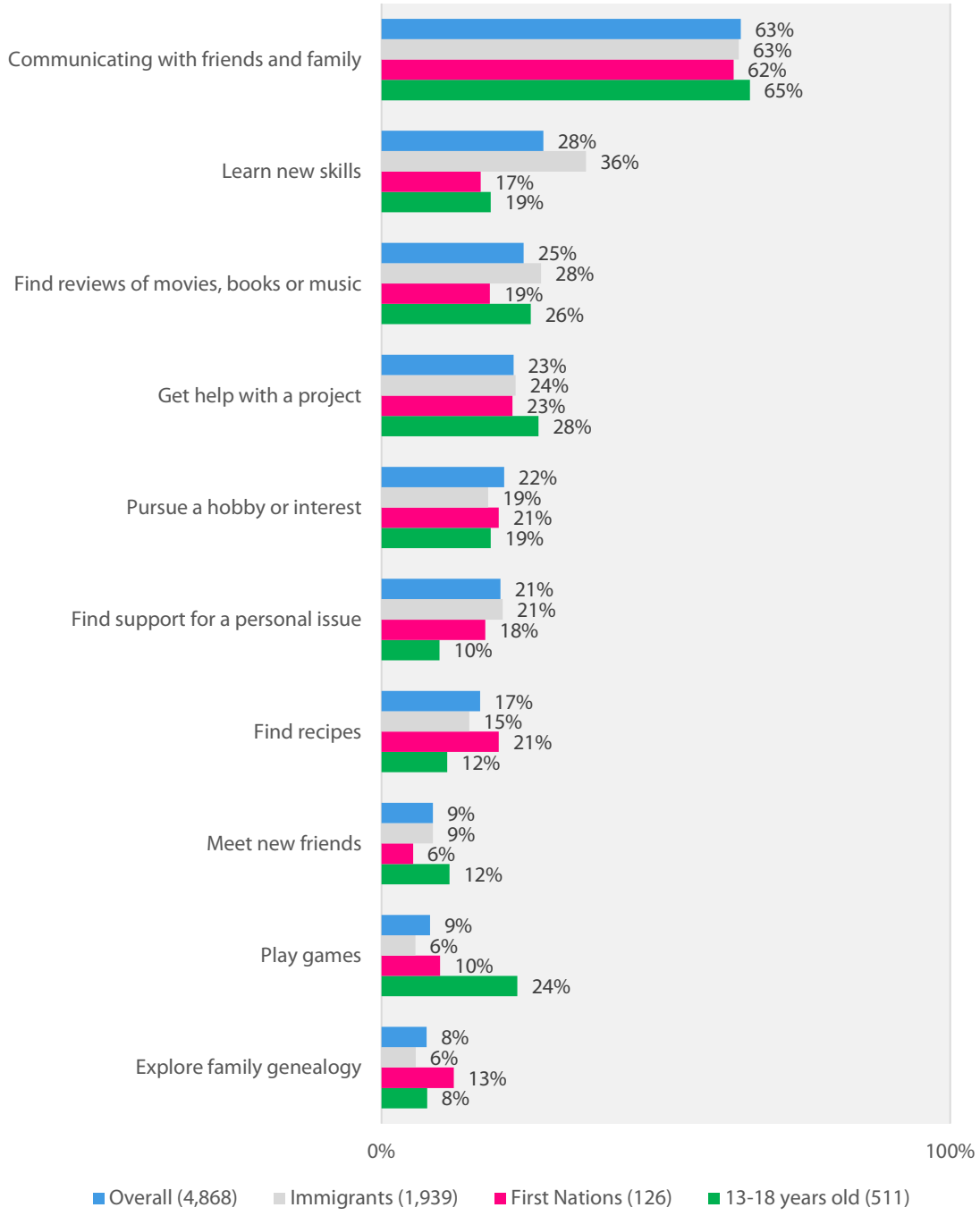


Figures may not add to 100% due to rounding

Communicating with friends and family is the top activity contributing to increased social engagement as shown in Figure 24. It is worth highlighting that for immigrant groups, *learning new skills* and *Finding support for a personal issue* were the key contributors to increased social engagement. Patrons who are at age from 13 to 18 years old, on the other hand, were more likely to use technology services to *get help with a project or enjoy culture activities* such as find reviews of movies, books or music, and play games.

Figure 24: Activities contributing to increased social engagement

Survey questions: What activities contributed most to your increased social engagement? (follow-up question to responses presented in Figure 23)

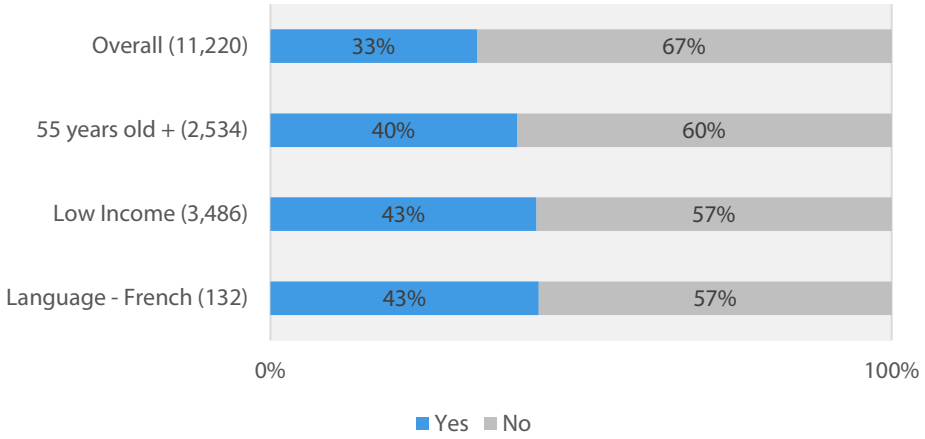


Access to Government Resources Online

As shown in the figure below, 33% of respondents reported using the technology service(s) at libraries to access government services or resources online. Patrons identifying as 55 and older (40%), low-income (43%) and French speaking (43%) were more likely than other groups to use technology services to access government resources.

Over 1/3 of the respondents (33%) used technology service(s) at the library to access government services or resources online.

Figure 25: Access to Government Resources
Survey question: Did you use the technology service(s) to access government services or resources online?



When asked what government services/resources patrons had used the library's technology service(s) to access, the top answers were that they *got government forms* (40%) and *learned about government programs or services* (37%) (Figure 26).

Older patrons (55 years old +) were more likely to use the technology services to *get help from a government official or agency* (42%), *applying for a permit or license* (46%) and/or *finding advice or assistance with a legal question or problem* (34%).

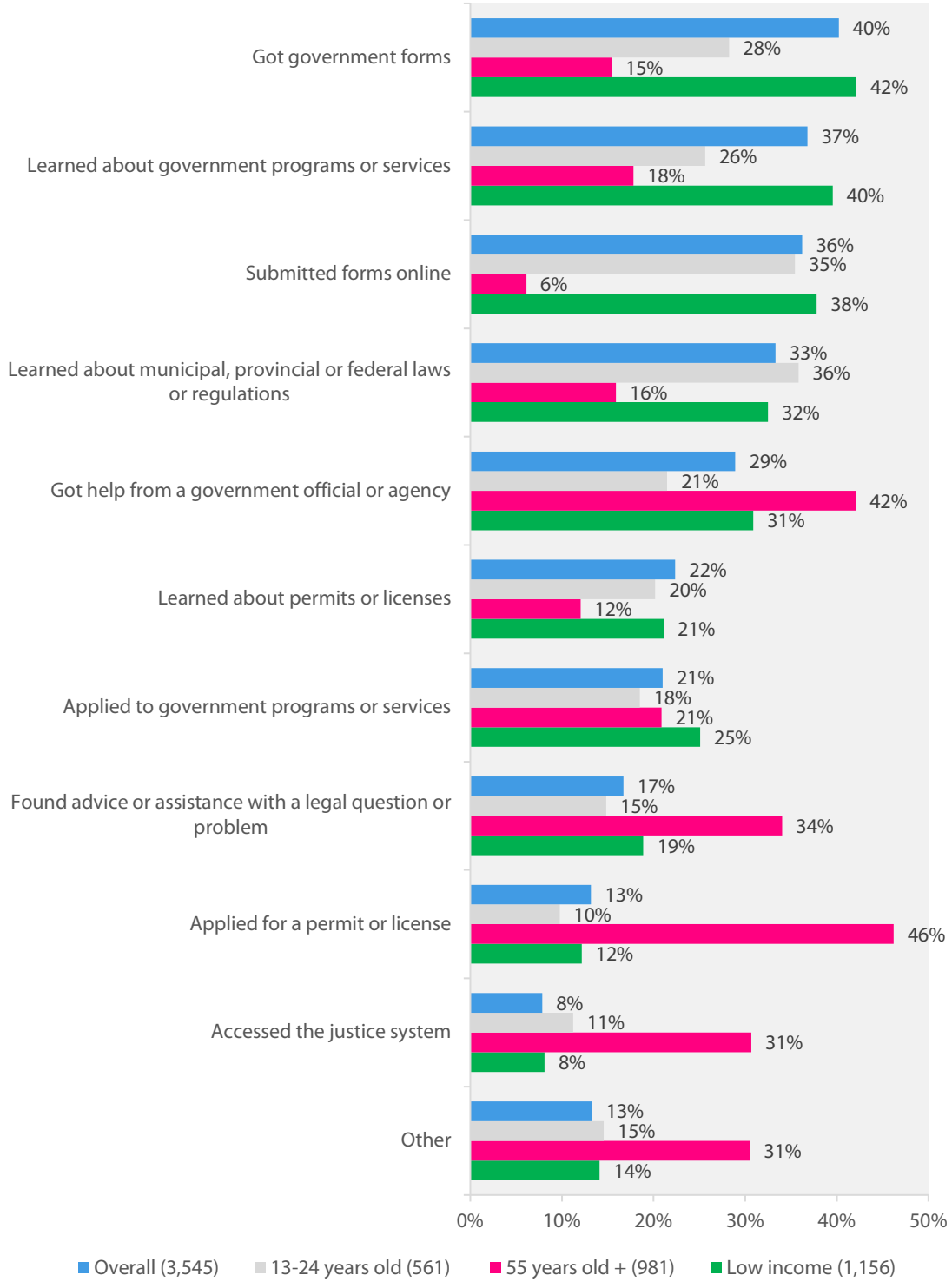
Patrons who identified as low-income benefited from using technology services to access government resources too. 42% of the patrons who identified as low-income *got government forms*, and 40% of them *learned about government programs or services* and *submitted forms online*.

This outcome shows that the library helps people maintain access to critical support services and by working towards digital equity. The library fulfills a role that aligns with the Ontario Digital Service's call for improving and expanding government services online[8].

[8] As drawn from Ontario Government website, "Ontario Digital Service"

Figure 26: Government services and resources accessed using technology services

Survey question: If so, what government services/resources did you access? (follow-up question to "yes" responses presented in Figure 25)



4.3.2 Creativity and Innovation

Creativity and Innovation is another secondary outcome area led by increased Digital Inclusion and Digital Literacy, where libraries provide basic services as well as specialty services for library patrons to engage in creative processes.

The key performance indicator related to Creativity and Innovation is Making creative products.

The technology services that contribute to all the **Creativity and Innovation** KPI were (Appendix A):

- WiFi Internet access at the library
- WiFi Internet access outside of the library (after hours)
- Access to Internet at a library workstation
- Access to Internet through a borrowed WiFi Hotspot
- Laptops and/or tablets borrowed for general use (at the library or for use outside the library)
- Devices used for entertainment (not applicable to the use of technology with or on behalf of others)
- Assistive technology equipment and other specialty services
- Digital literacy (one-on-one support and technology class) for digital design and other related e-resources.

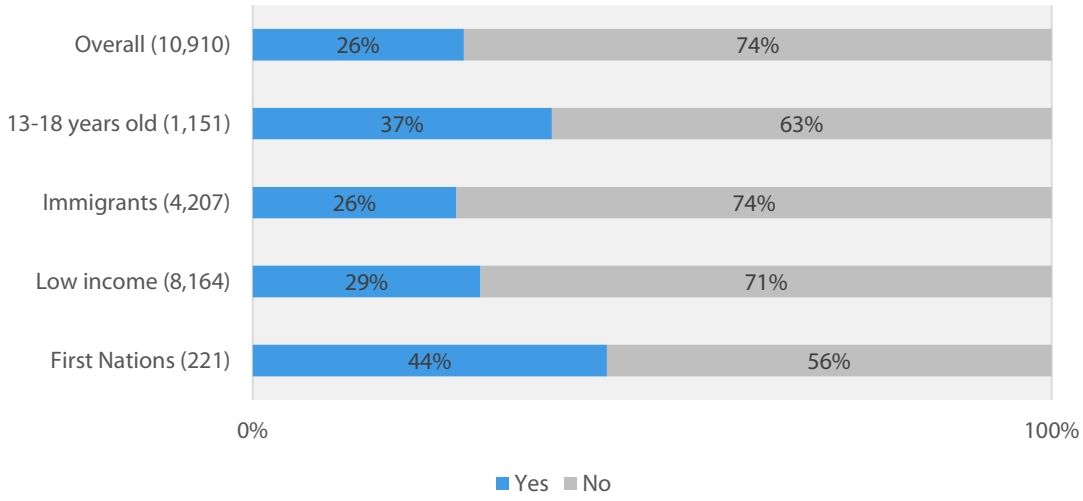
Making Creative Products

Nearly one third of respondents (26%) used library's technology service(s) to make a creative product with respondents who identified as First Nations (44%) and teenagers (13-18 age) (37%) being more likely than the overall base (26%) to use it for this purpose (Figure 27).

First Nations and Teenagers are more likely to use technology services at the library to make a creative product

Figure 27: Making a creative product

Survey question: Did you use the technology service(s) to make a creative product?



Of respondents who said they used the technology services to make a creative product, 78% of them used *WiFi Internet access* as shown in Figure 28. *Access to Internet at a library workstation* (16%) is another connectivity related technology service used by patrons. Other than connectivity technology services, some specialized technology services also contributed to the creativity and innovation outcome, including *content creation and editing software (6%), fabricating and manufacturing equipment* (6%), *audio-visual production equipment* (4%), and *Electronics, circuitry and robotics* (3%).

Figure 28 also shows that older patrons beyond retirement age (65 years old+) were more likely than younger patrons to access Internet through a library workstation, to use audio-visual production equipment at the library, and to use assistive technology equipment at the library. Unlike the "touch screen generation", those older patrons used more physical services for creating creative products. They are also more likely than younger patrons to use Microsoft Office software at the library for the same purpose.

Figure 28: Technology services used for creative production

Survey question: If so, which service(s)? (follow-up question to "yes" responses presented in Figure 27 by age demographic)

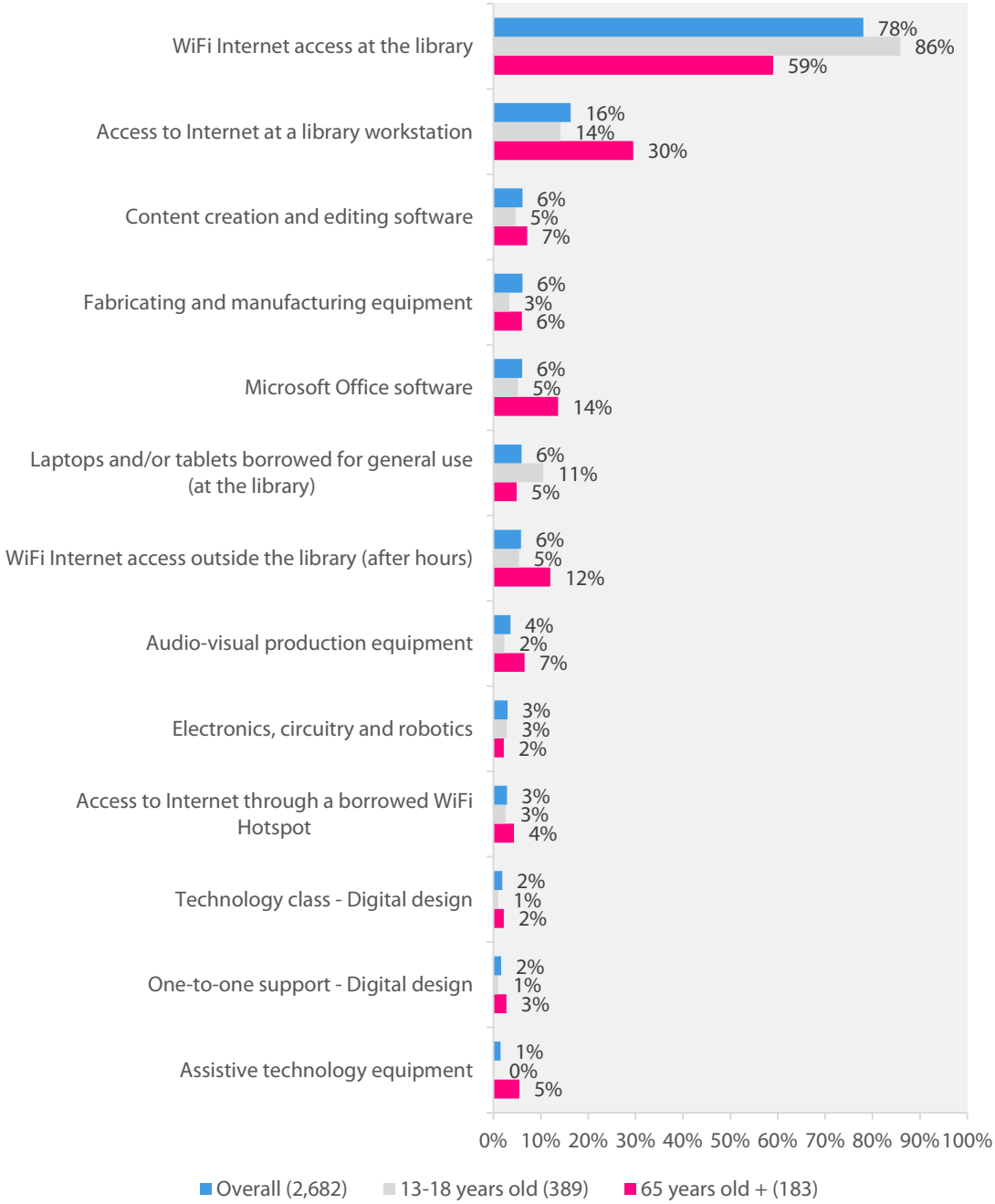
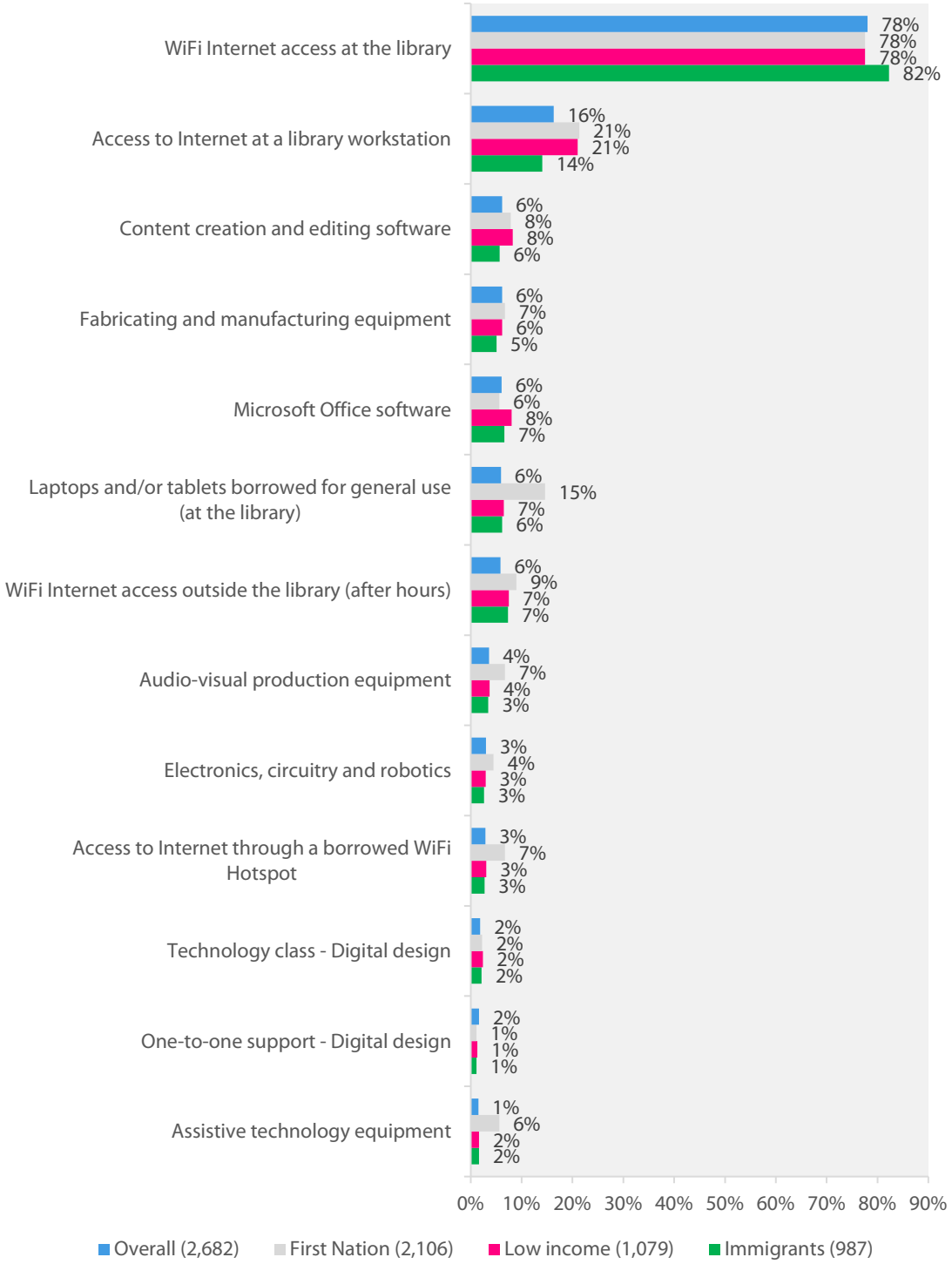


Figure 29 shows that patrons who identified as First Nations were more likely to be using equipment and software services including *Laptops and/or tablets borrowed for general use* (at the library)(15%), *Content creation and editing software* (8%), *Audio-visual production equipment* (7%). Overall, immigrants were more likely than overall respondents to be using almost all technology services listed below in making creative products.

Figure 29: Technology services used for creative production

Survey question: If so, which service(s)? (follow-up question to "yes" responses presented in Figure 27 by minority group demographic)



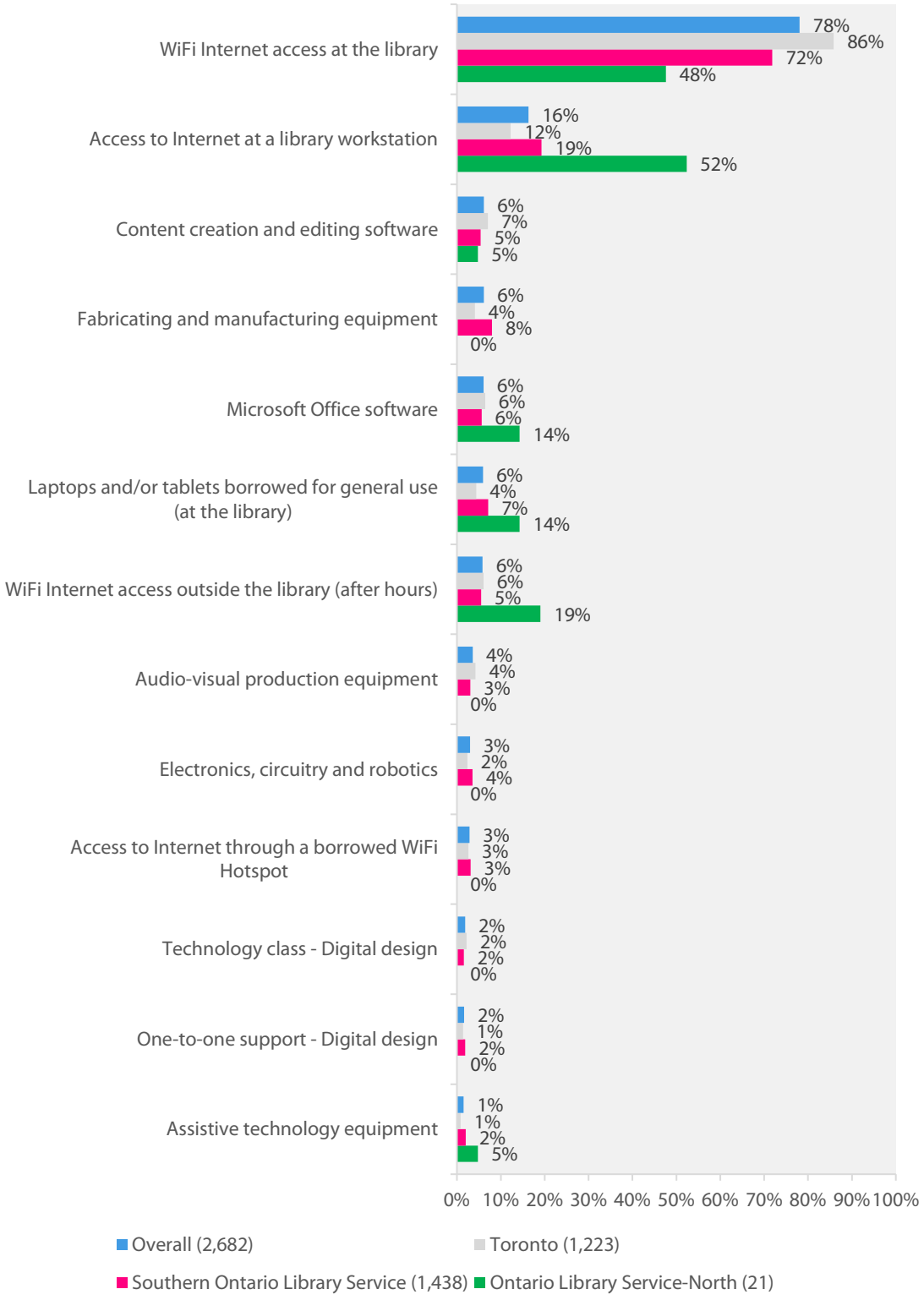
As shown in Figure 30, of those who used technology services to make a creative product, 52% of respondents from Ontario library service - North accessed the Internet at a library workstation. They are more likely than the respondents from Southern Ontario library service (19%) to be using this technology service for creating creative products. This is a very high figure and tells us that workstation access is currently the most reliable form of connectivity in Ontario library service-North. However, connecting the community to the Internet through workstation access may be limiting as it depends on how many Internet-enabled devices are available for the community. There is potential to increase innovation outcomes by increasing workstation access or by enhancing connectivity services that can sustain a greater number of users like high-speed wireless Internet.

For the same purpose, Ontario library service - North respondents are also more likely to be using *Microsoft Office software* (14%) and borrowing *laptops and/or tablets* (14%) and *assistive technology equipment* (5%) at the library.

Respondents from Ontario library service - North are significantly more likely (19%) than the respondents from Southern Ontario library systems (5%) to access WiFi Internet outside the library (after hours) for creative products. This data shows the potential of increasing Digital Inclusion by adjusting library opening hours especially in remote regions. By extending service hours, libraries can make greater use of public resources even when closed.

Figure 30: Technology services used for creative production

Survey question: If so, which service(s)? (follow-up question to "yes" responses presented in Figure 27 by region)



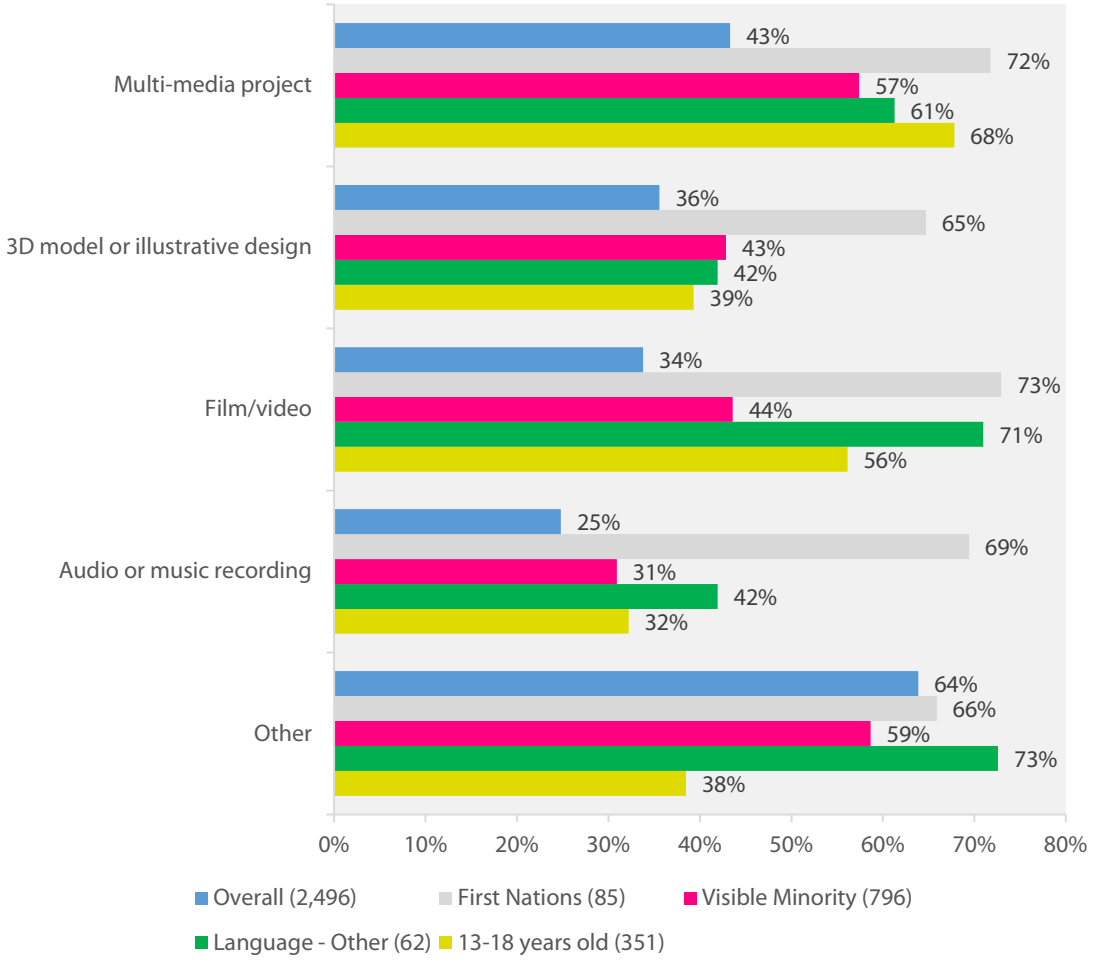
The results above show that the technology services libraries provide make libraries a space for participation in today's digitally driven world and equip patrons with resources to improve creativity and innovation.

> *"The media rooms provide a wonderful service to the community by enabling individuals to learn and explore various types of audio-visual production without the cost these involve."*
>
> Patron Feedback

Figure 31 shows that *Multi-media projects* (43%) are the most common creative products made using a library service. 3D models or illustrative designs were also popular, ranking the second most common creative product made (36%). The newly added option in the beta phase, "3D model or illustrative design" represents the creativity and innovation resulting from patrons using either 3D printers, or content creation software. 64% of the respondents who used technology to make a creative product reported "other" type of creations, including "software development", "Arduino" (an open source electronic prototyping platform enabling users to create interactive electronic objects), "writing", and a host of others.

Figure 31: Creative products made using technology services[9]

Survey question: What did you make? (follow-up question to "yes" responses presented in Figure 27)



4.3.3 Workforce Development

Workforce development is another secondary outcome enabled by increased primary outcomes. These questions in the *Bridge* Patron Survey were designed to measure the key performance indicators related to workforce development:

- **Educational Activities/Lifelong Learning**: Use of technology service(s) for educational activities (e.g. applying to enroll in a degree or certificate program, taking an online class or workshop);

[9] "Language – Other" includes more than 60 types of language such as Chinese, Spanish, Russian, etc.

- **Employable Skills**: Use of technology service(s) to develop employable skills (e.g., management skills, administrative skills, technical skills, etc.); and,
- **Job Outcomes**: Use of technology service(s) to develop skills related to finding a job (e.g., accessing job boards, building a resume, preparing for an interview, etc., and success in finding a job).

The technology services that contribute to all the Workforce Development KPIs were (Appendix A):

- WiFi Internet access at the library
- WiFi Internet access outside of the library (after hours)
- Access to Internet at a library workstation
- Access to Internet through a borrowed WiFi Hotspot
- Laptops and/or tablets borrowed for general use (at the library or for use outside the library)
- Assistive technology equipment
- Assistive technology equipment and other specialty services
- Digital literacy (one-on-one support and technology class) on Email, Microsoft Office software, social media, using web resources, business research and skills, etc.

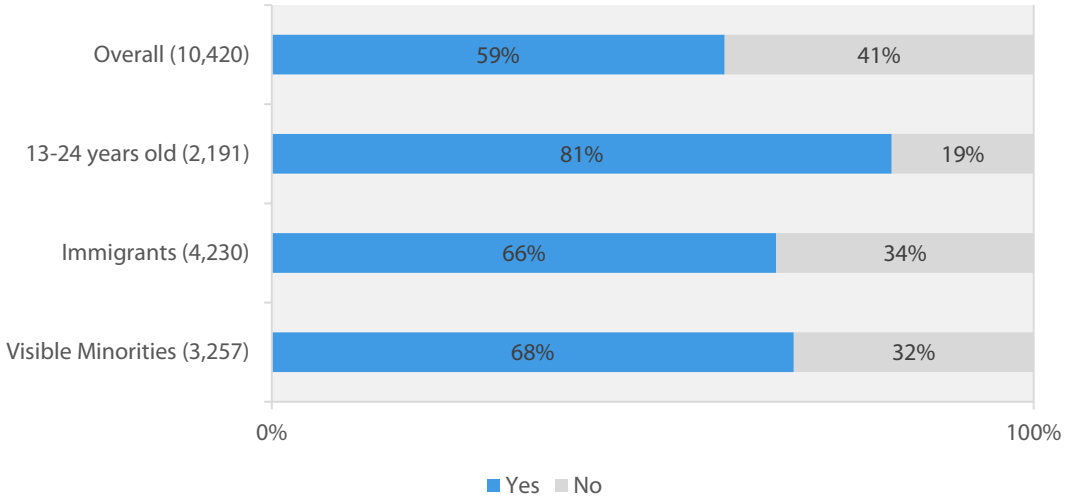
Educational Activities

As shown in the figure below, more than half (59%) of respondents said that they used the library's technology service(s) for educational activities. Younger patrons (13-24 years old), immigrants, and patrons identifying as visible minorities were more likely to have used technology service(s) for educational activities.

Younger patrons (13-24 years old) were more likely to use technology services for educational activities (81%) than the overall respondents (59%).

Figure 32: Use of technology services for educational activities

Survey question: Did you use the technology service(s) for educational activities?



When asked what educational activities they had engaged in using technology service(s), the top three answers were *completing coursework or homework* (53%), *taking an online class or workshop* (31%) and *learning about a degree or certificate program* (30%), as shown in Figure 33. Immigrants were more likely to have taken an online class or workshop, as well as learned about a degree or certification program (36%), while younger patrons were more likely to have completed coursework or homework using the technology services (79%). This outcome demonstrates that the library is a place where youth, who may not have access to a computer and high-speed Internet at home, can access a workstation or a borrowed laptop to learn and complete blended-learning assignments. The library's technology service offerings align with the Ontario Ministry of Education's e-Learning strategy. The strategy aims to provide students with access to valuable software and resources.[10]

"I like how we still have access to the workstations. I do not always have a laptop with me and sometimes I stop into the library on my way somewhere else and the computer workstations allow me to look up information quickly. I use the printer regularly and use the computer workstations in order to print up reports, resumes, confirmation emails, and forms."

"Just checking out my e-mails and Internet when I can during the day. My home has a computer, but my brothers sometimes use it more than me. Plus, to watch some Youtube videos."

" Love the public WiFi, it lets me access my homework faster with minimal to no wait times"

"Technology services at the library help me to improve my ESL skills. From Monday to Friday I come to the library and borrow a Macbook to do my homework after school time."

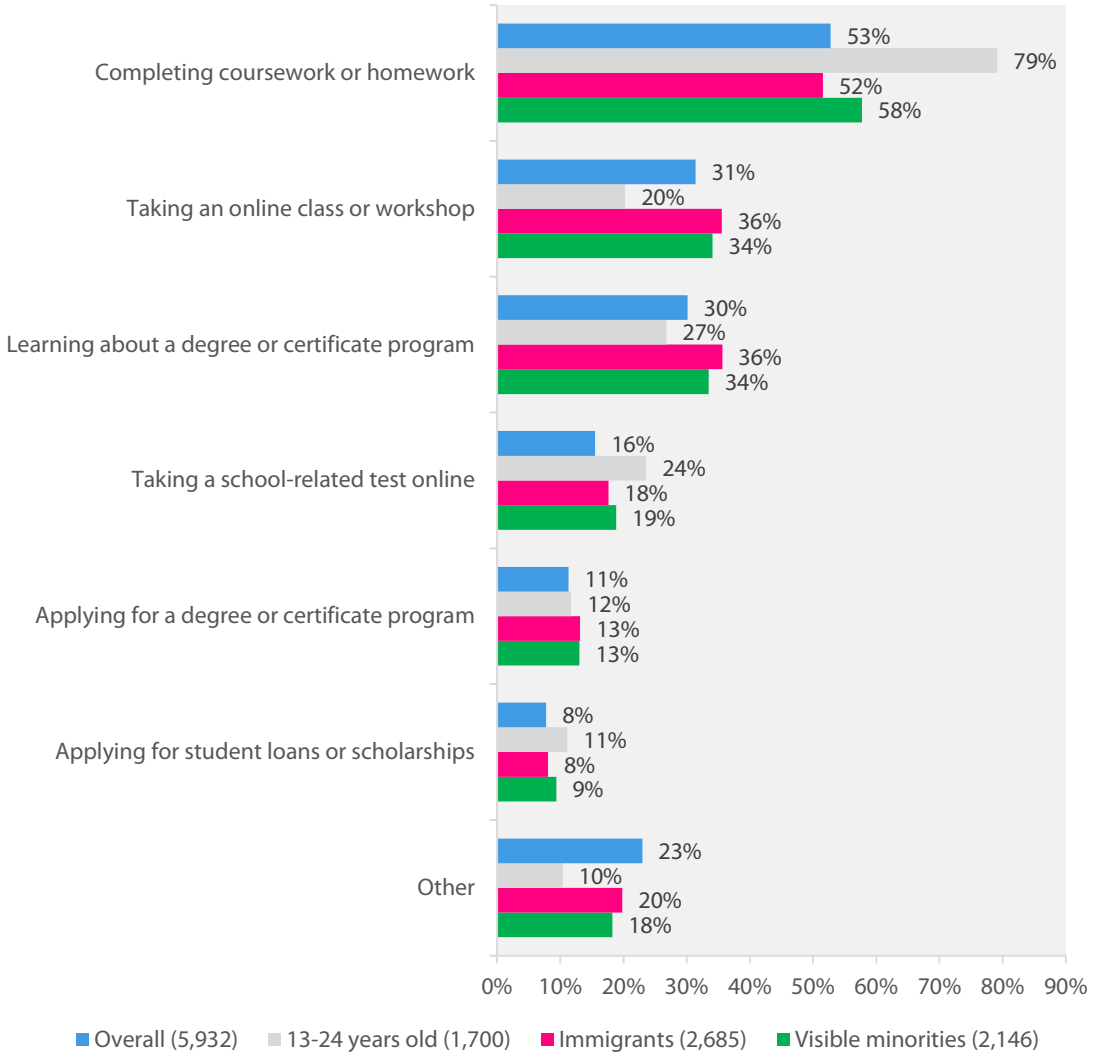
"In high school, there is no way to use Microsoft Word when the schools kick us out. It was beneficial being able to use the library computers to do homework and such."

Patron Feedback

[10] As drawn from Ontario Ministry of Education website, "About Ontario's e-Learning Strategy".

Figure 33: Educational activities conducted using technology services

Survey question: If so, which activities? (follow-up question for "yes" responses presented in Figure 32)



Employable Skills

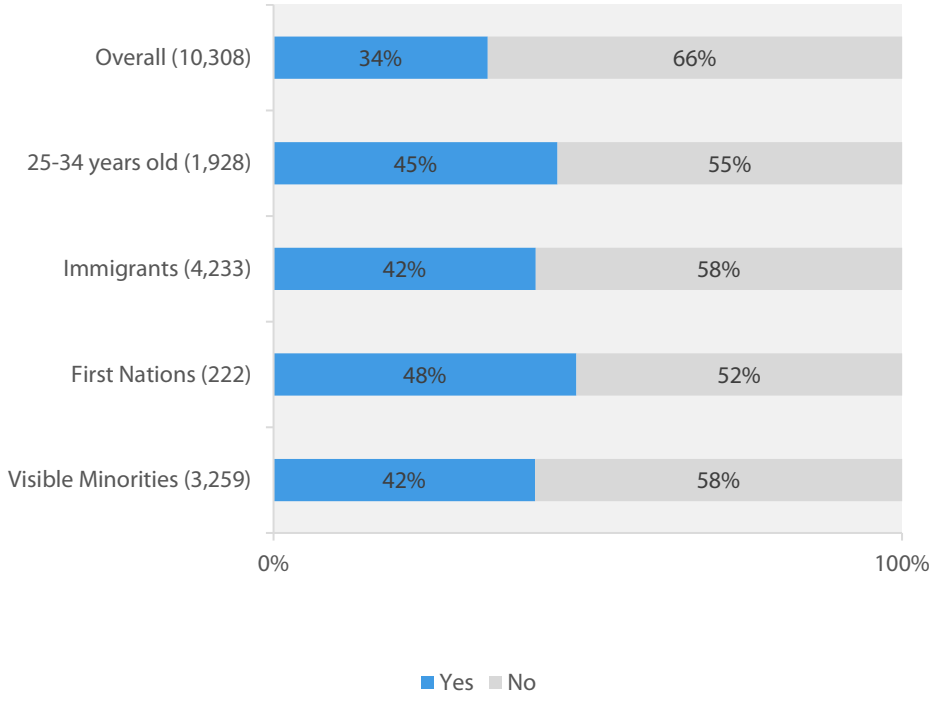
The survey revealed that 34% of patrons used the related technology service(s) to develop employable skils (Figure 34). Patrons aged between 25 and 34 (45%), and patrons identified as First Nations (48%) were more likely than the overall respondents to benefit from using technology service(s) at the library for employment skills development. Figure 34 shows the important role the

First Nation patrons are more likely to benefit from using technology service(s) at the library for employment skills development.

library holds in creating workforce development impact for patrons in the 25-34 years old range, and patrons from First Nation communities.

Figure 34: Use of technology services to develop employable skills

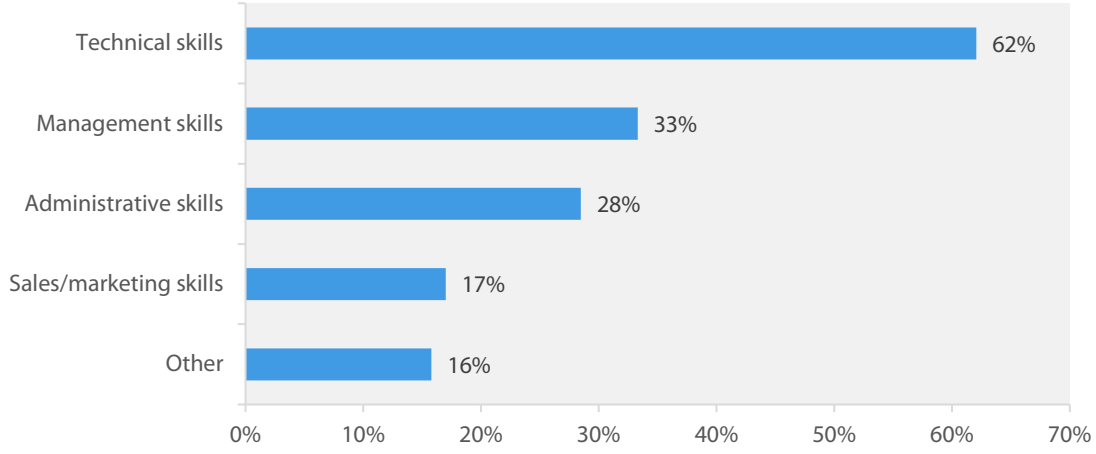
Survey question: Did you use the technology service(s) to develop employable skills?



Technical skills are the top employable skills that respondents developed using library technology services (62%), as seen in the figure below.

Figure 35: Employable skills developed

Survey question: If so, which skills? (follow-up question to "yes" responses presented in Figure 34)



Job Search Skills and Success

Again, Figure 36 shows the important role libraries play in helping patrons develop job search skills, with the larger impact than overall base (28%) seen for respondents between the ages of 25 and 34 years old (44%) and respondents identifying as members of First Nations community (44%).

Figure 36: Use of technology services to develop job search skills

Respondents between 25-34 years old, and/or respondents identifying as members of First Nations community are more likely than overall base (28%) to use technology service(s) to develop skills related to finding a job.

Survey question: Did you use the technology service(s) to develop skills related to finding a job?

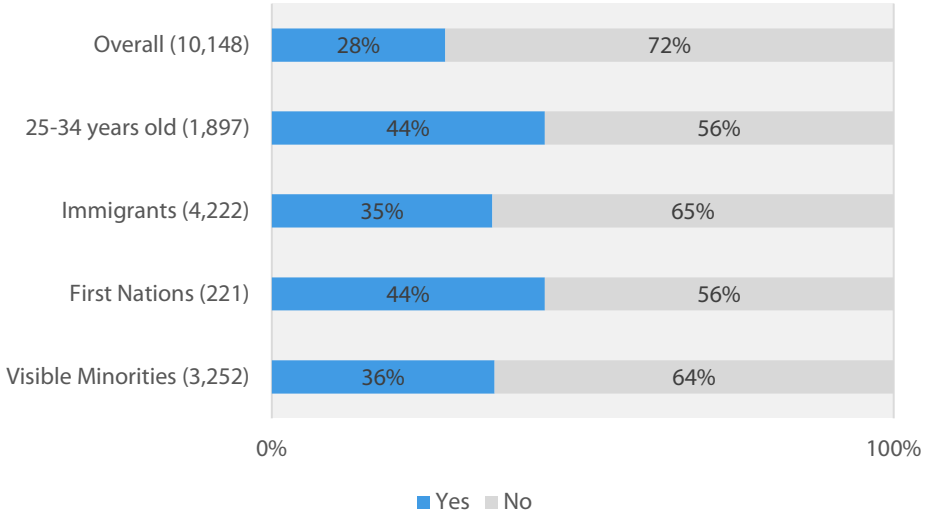


Figure 37 shows that among the respondents who used technology service(s) to develop skills related to finding a job, 62% of them used technology service(s) to *access job boards and listings,* 56% of them used technology service(s) to *find information related to a job or profession* and 49% of them used technology service(s) for *improving resume building skills.*

Figure 37: Employment skills developed

Survey question: If so, in which of the following ways? (follow-up question to "yes" responses presented in Figure 36)

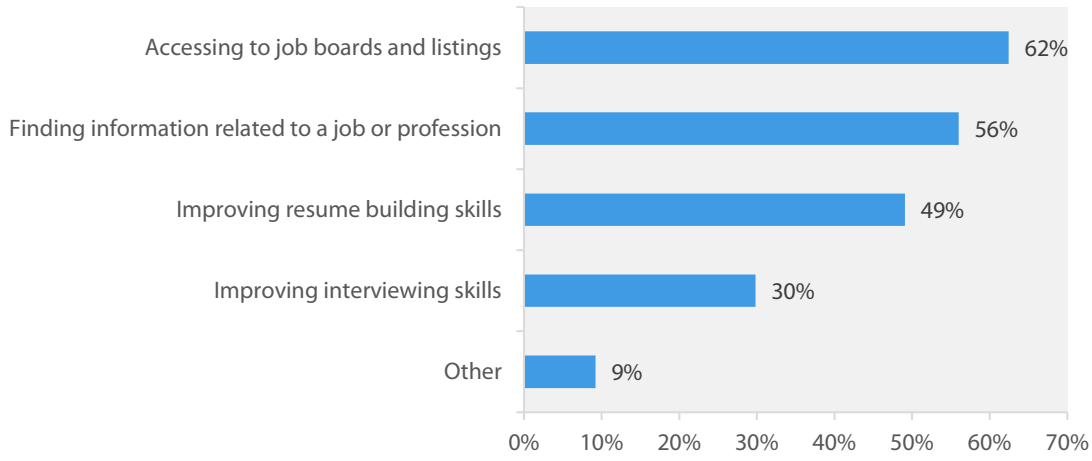
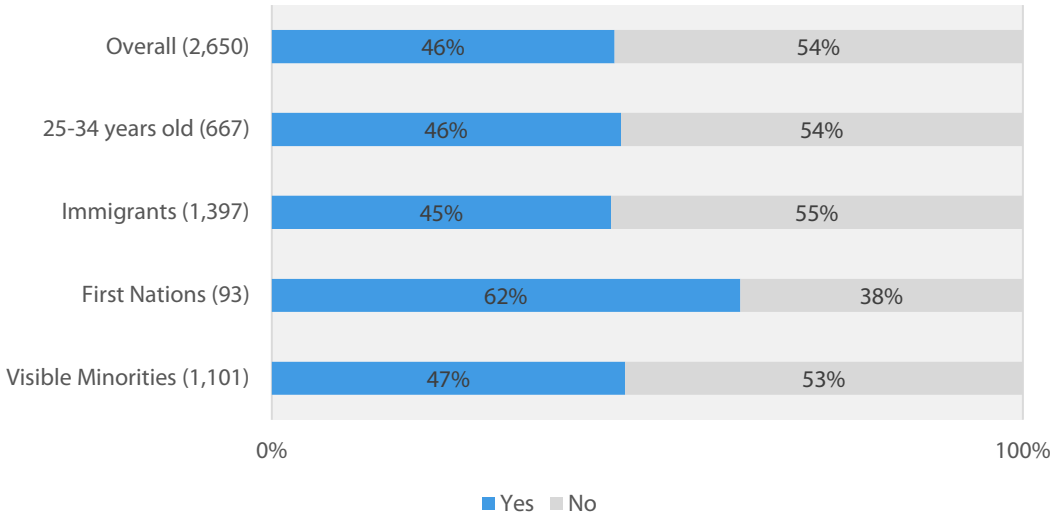


Figure 38 shows that 62% of respondents identifying as First Nations had a high level of success in finding a job when using the library's technology services for that purpose. The 93 respondents who identified as First Nations community members and responded to this question, were located all over the province, but primarily in Toronto (37%) and Mississauga (20%). Similarly, nearly half of the respondents in the 25 to 34 age group, immigrant group and/or identifying as a visible minorities group had a high level of success in finding a job when using the library's technology services for that purpose.

The top technology service categories that enabled development of employment skills (Appendix A) such as job searching and technical skills were *connectivity* (whether through WiFi or workstation) and *equipment and software* (whether it is laptop borrowed at the library or Microsoft Office access at the library). These results show the significant support libraries provide for workforce development and suggest that opportunities exist to scale impact by adding resume and interview-related programming and increasing availability of equipment/software.

Figure 38: Patron success in finding a job

Survey question: Were you successful in finding a job? (follow-up to "yes" responses presented in Figure 36)



4.3.4 Entrepreneurship and Business Development

Entrepreneurship and Business Development is another secondary outcome area enabled by increased Digital Inclusion and Digital Literacy. Technology services at public libraries play a key role in helping entrepreneurs and business owners establish, grow and/or manage their ventures. Patrons use the services for a variety of business activities at different stages from launching a new business to expanding an existing business. The survey in this section shows that libraries' contribution to the changing workforce and digital economy is important and libraries could use more resources.

The key performance indicators related to entrepreneurship and business development are:

- **Business Outcomes** resulting from activities undertaken using technology service(s) at the library (e.g., starting a business, connecting with potential patrons, etc.); and,
- **Employment Supported** by businesses using technology service(s) at the library for business-related purposes.

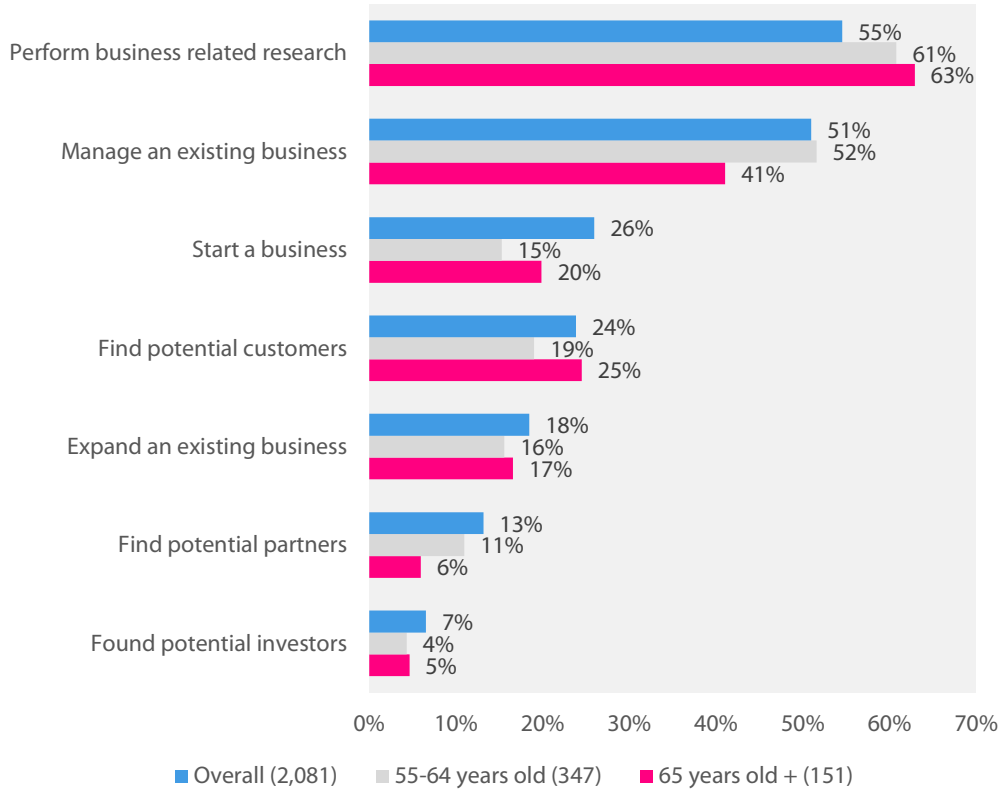
All technology services contribute to the **Entrepreneurship and Business Development** KPIs except devices used for entertainment, digital literacy (one-on-one support and technology class) for basic computer skills and job search (Appendix A).

Business Outcomes

Among the respondents who used technology services at the library to perform business related activities, more than half of them said they used the technology service(s) to *perform business-related research* (55%) *and manage an existing business* (51%) (Figure 39). 26% of the respondents who used the technology service(s) to engage in business-related activities used the services *to start a business* and 24% of them used the technology service(s) to *find potential customers*.

Figure 39: Use of technology services for business-related activities

Survey question: Did you use the technology service(s) to engage in any of the following activities? Excluding respondents that indicated that they did not use technology services for business-related activities



Employment Supported

When asked about the number of people their business employed, 85% of respondents reported hiring less than 10 people. This data suggests that the impact of the technology services provided at the library is amplified for small businesses.

4.4 Awareness and Need for Technology Services

The Patron Survey also asked patrons about the technology services that they had not used and the reasons for not using them. The patrons were asked to select the technology services that they had not used based on four options:

- *I didn't know the library offered the services, but I am not interested in using it*
- *I know about the service and am not interested in using it*
- *I didn't know the library offered the services and I am interested in using it*
- *I know about the service, am interested in using it but haven't yet had a chance to.*

Figure 40 displays the results from these questions. In the connectivity technology service category, more than one third of the respondents reported low levels of awareness but interest in using the technology services- *Access to Internet through a borrowed WiFi Hotspot* (31%) and *WiFi Internet access outside the library (after hours)* (34%). Almost half (48%) of the respondents knew about WiFi Internet access at the library and were interested in using it but had not yet had a chance to. These results reveal that libraries can take additional steps to increase awareness of their technology offerings among patrons, especially among demographics that have limited access to Internet elsewhere.

In the equipment and technology service category, all technology services had about one third of

Libraries can take additional steps to increase awareness of their technology offerings among patrons, especially among demographics that have limited access to internet elsewhere.

respondents reporting that they did not have awareness of them but were interested in using them. Specialty services had higher positive responses for this question and include *creation and editing software* at 38% and *electronics, circuitry and robotics* and *business-related software* at 33%. Increasing awareness of the availability of these services could have significant impact on secondary outcomes such as creativity and innovation.

For the digital literacy (one-on-one support and technology class) technology service category, patrons' awareness and interests are shown in Figure 41. *Programming and codin*g in one-on-one support (27%) and technology classes (31%) was reported most as the technology service that patrons did not know about but were interested in using.

These results once again suggest that libraries could benefit from increased exposure and marketing efforts to help patrons learn about and access the technology services they are interested in using.

Figure 40: Patron reasons for non-use of technology services offered by the library (part 1)
Survey question: For those services you didn't use in the last month, please let us know why you didn't use them

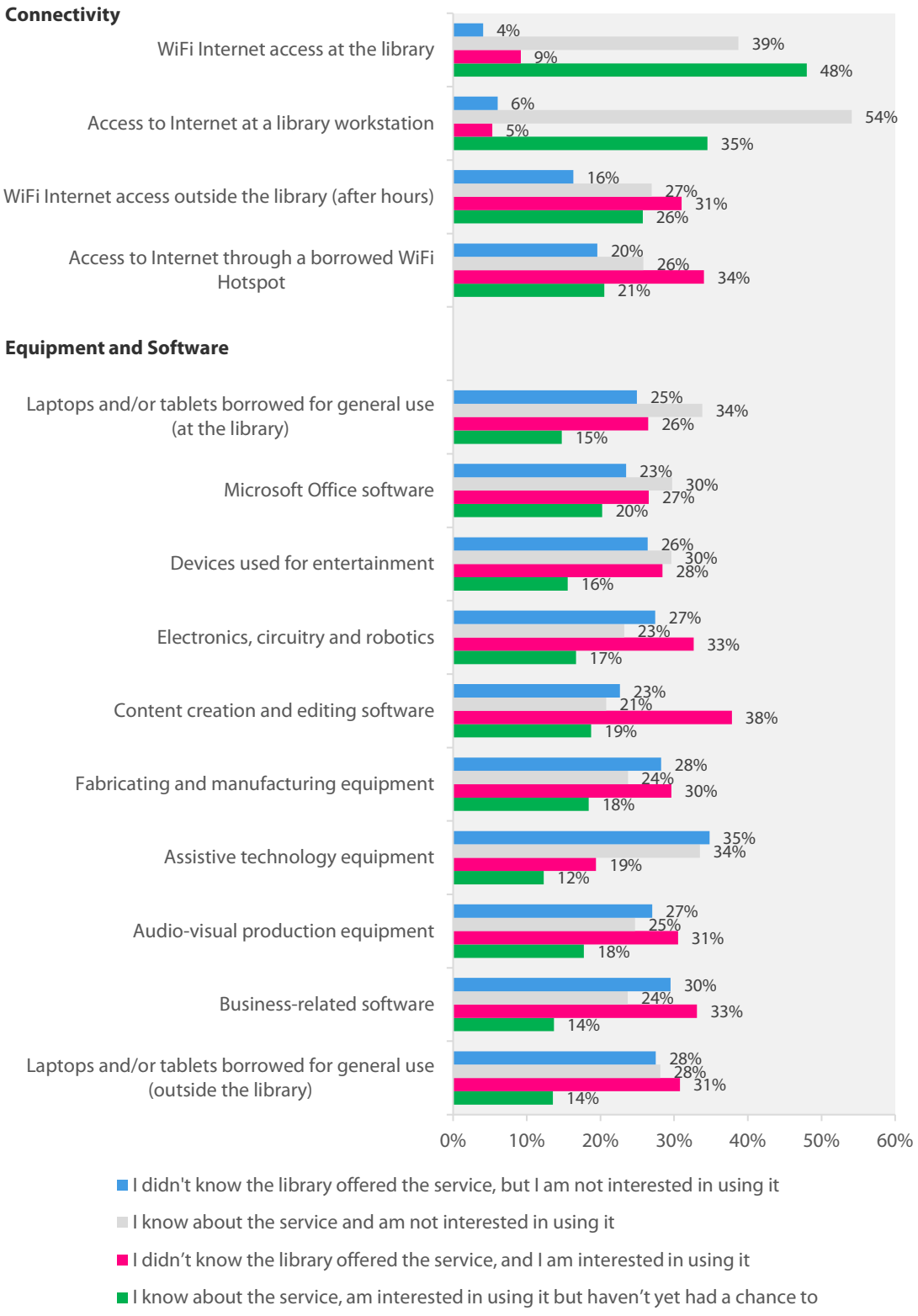
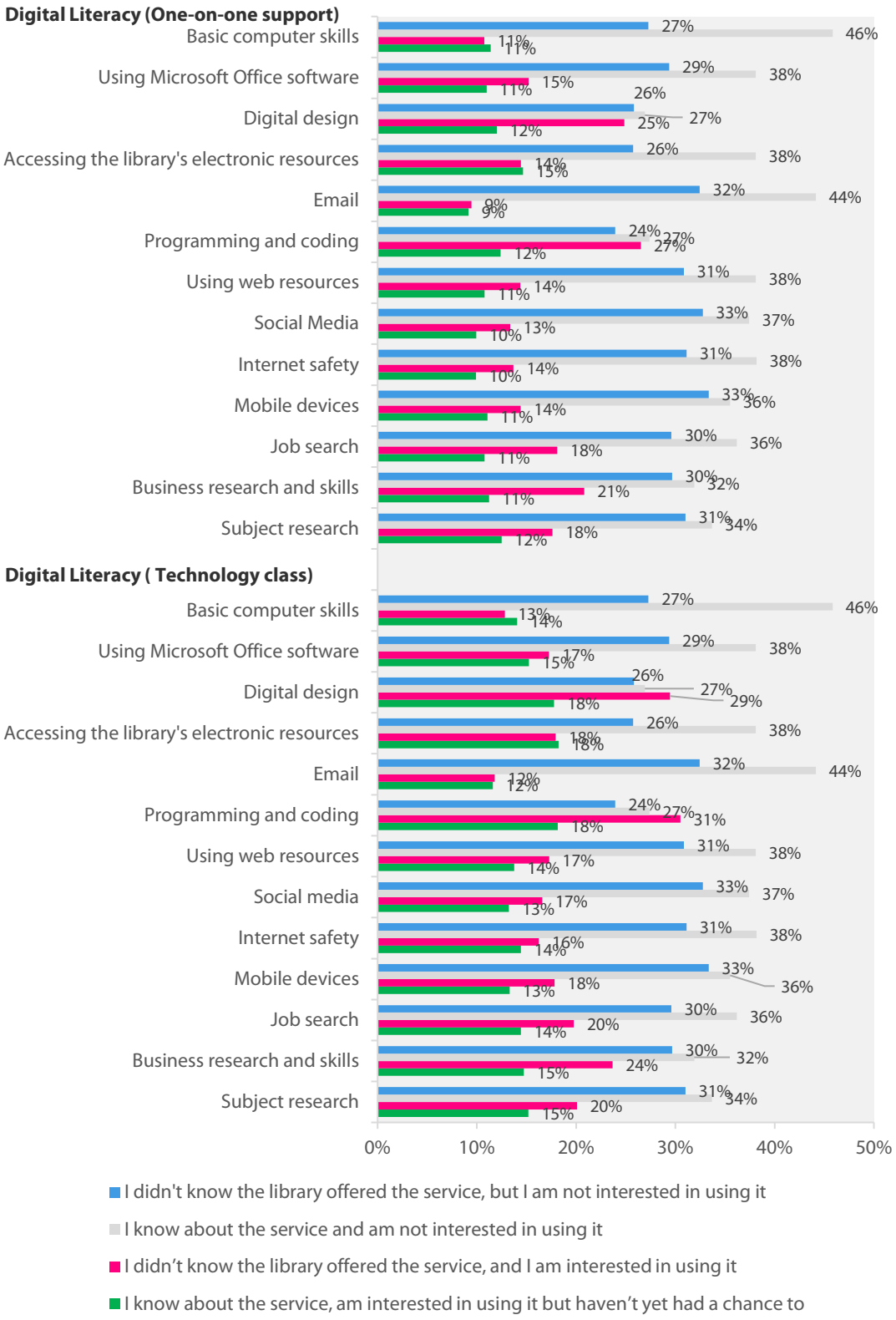


Figure 41: Patron reasons for non-use of technology services offered by the library (part 2)
Survey question: For those services you didn't use in the last month, please let us know why you didn't use them

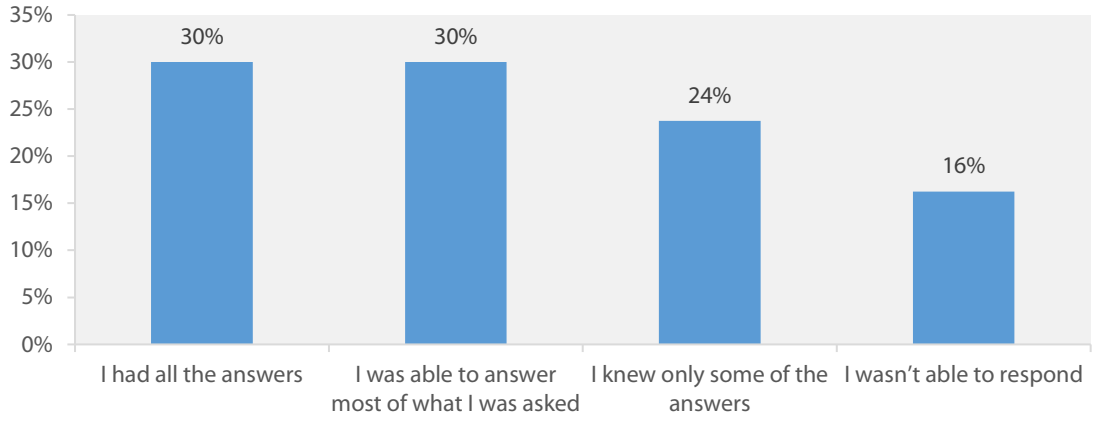


4.5 Technology Support

The analysis in this section derives from the Staff Survey. Library staff provide one-on-one technology support as well as technology classes to their patrons to support digital literacy. Library staff fielded many questions about the library's technology services daily. Only frontline staff that provide patron services as a regular part of their job were surveyed. As seen in the figure below, only 16% of the libraries reported that they were not able to respond to questions they received in the past month, whereas 60% of libraries reported that they were able to answer most or all of the questions.

60% of library systems reported that the staff were able to answer most or all of the questions.

Figure 42: Staff comfort with providing technology support (% of library systems)
Survey question: How comfortable are you in answering the questions you were asked in the last month?

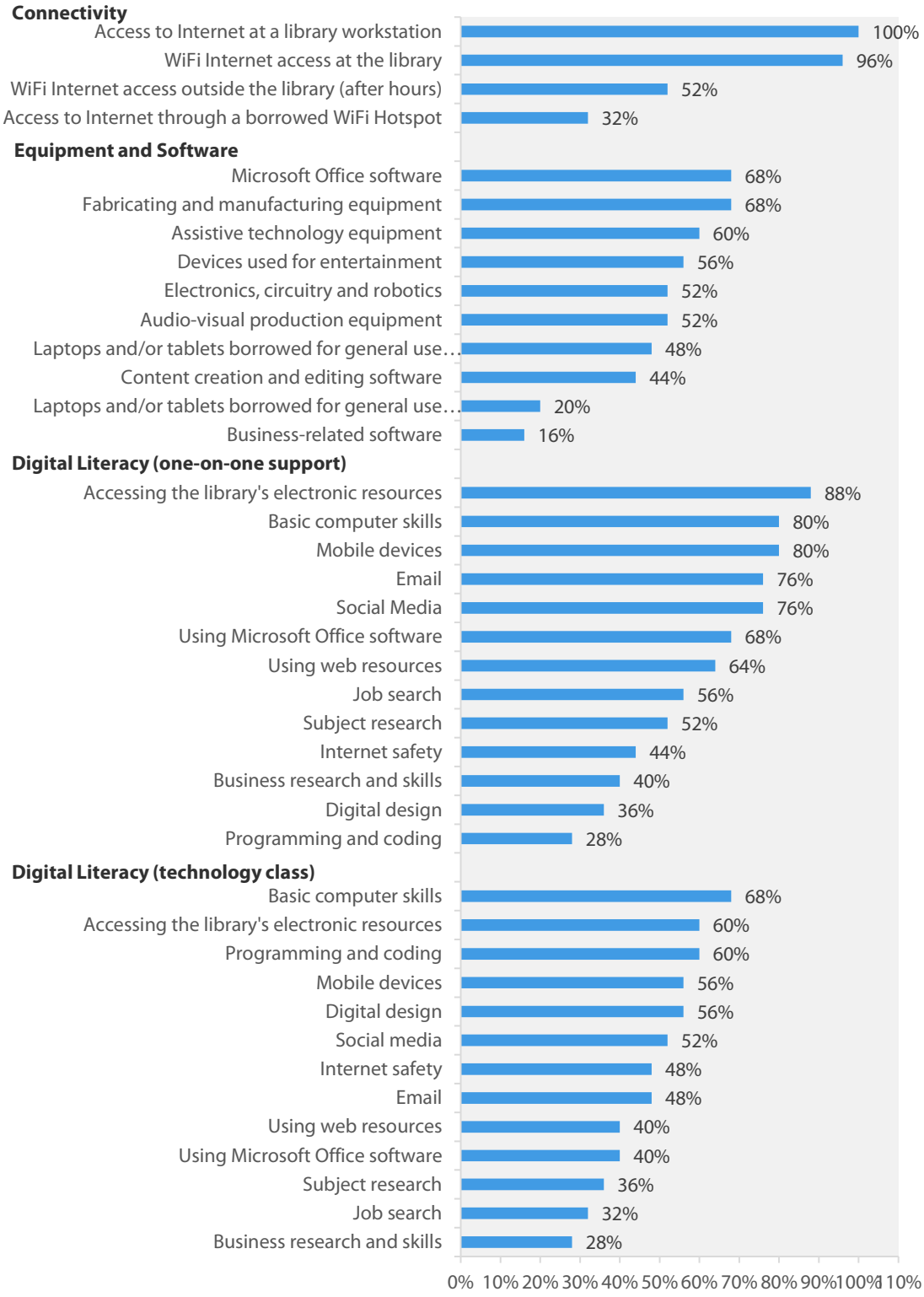


n = 25

As shown in the figure below, all the library systems reported being asked about *access to Internet at a library workstation*, which reflects the prevalent use of this service. In the one-on-one support technology service category, *accessing library's electronic resources* is the technology service that is mostly asked about.

Figure 43: Questions asked to library staff (% of library systems)

Survey question: In the last month, have you answered patron questions about any of the following technology services?



n = 23

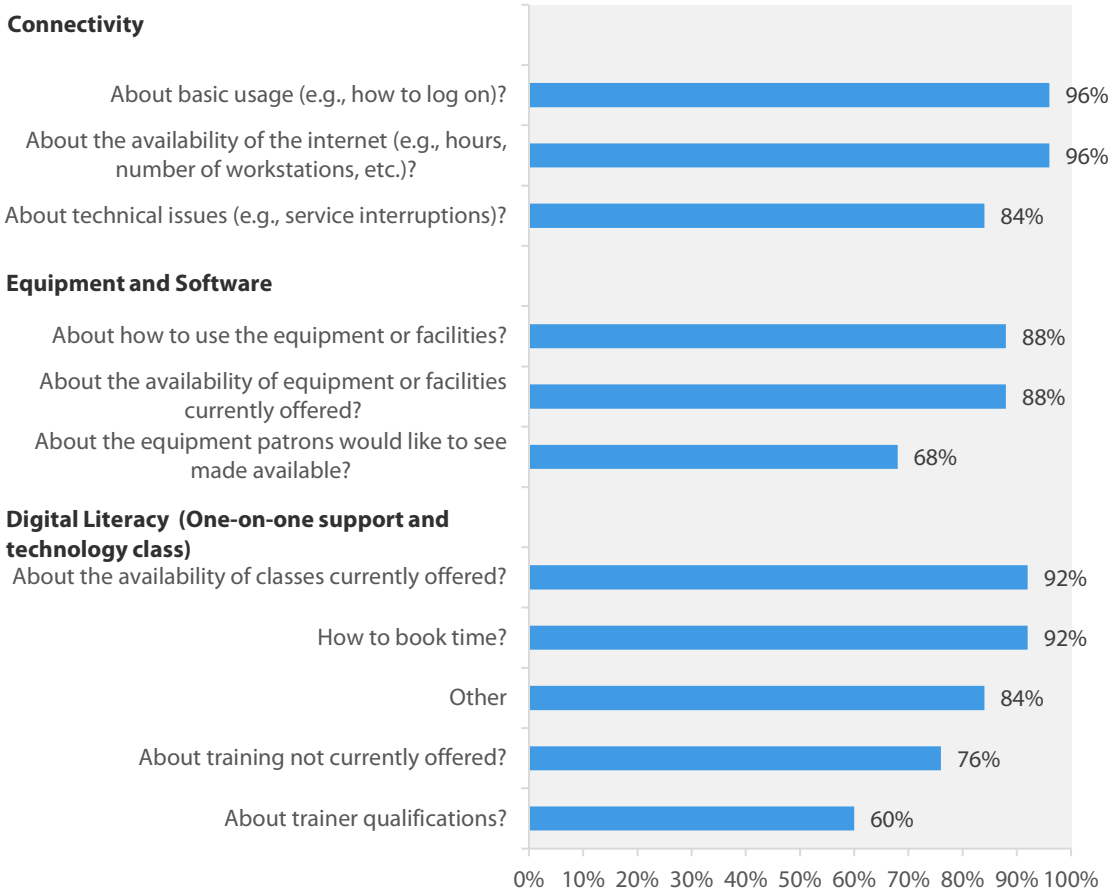
Figure 44 shows different types of questions that staff were asked in each technology service category. Many types of questions were asked consistently in each survey time. For example, questions *about technical issues (e.g., service interruptions)* (84%), *about the equipment patrons would like to see made available* (68%), or *about trainer qualifications* (60%).

In the connectivity technology service category, 96% of library systems reported that staff received questions about *basic usage (e.g., how to log on)* and *Availability of the Internet (e.g., hours, number of workstations, etc.)* in any given month. In the equipment and software technology service category, 88% of library staff were asked questions about *how to use the equipment or facilities,* and *the availability of the equipment or facilities currently offered*. In the digital literacy (one-on-one support and technology class) technology service category, 92% of library staff were asked *about the availability of classes currently offered* and *how to book time*.

Figure 44 suggests that library staff received a variety of questions across all service categories, particularly about connectivity services including how to log on and the availability of the Internet.

Library staff received a variety of questions across all service categories, particularly about connectivity services including *how to log on* and the *availability of the Internet*

Figure 44: Questions asked of library staff (% of libraries)
Survey question: What kinds of questions have you been asked?



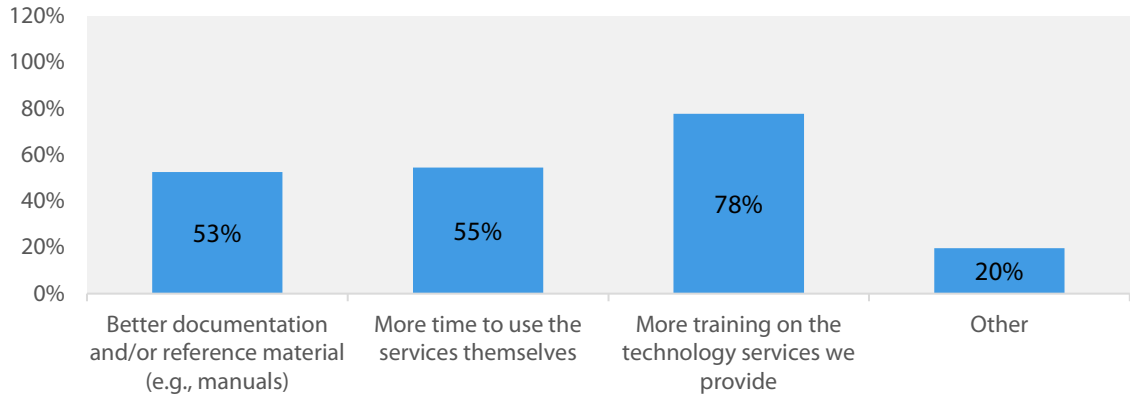
n = 25

The survey also asked staff what they would need to improve their ability to answer patron questions. As shown in the figure below, *more training on the technology services we provide* is the option that was selected most (78%); followed by *more time to use the services themselves (55%)*. 53% of the library systems responded *better documentation and/or reference material* (e.g., manuals).

The questions staff receive from patrons provide insight into patron demand for and knowledge of technological services, while the staff's ability to answer these questions is important to understand the level of support they are able to provide and identify areas for increased training.

Figure 45: Staff provide technology support (% of library systems)

Survey question: What would you need to improve your ability to answer patron questions?

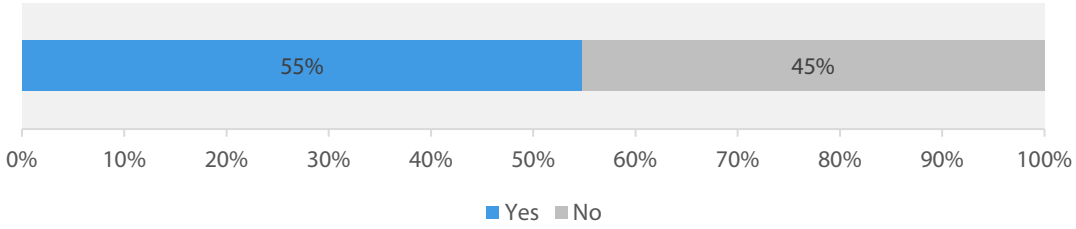


n = 25

One-on-one support and technology classes offered by staff directly contribute to Digital Literacy outcomes, particularly through basic use of technology. As shown in the figure below, 55% of library systems reported that their staff provided one-on-one support for patrons for the technology services offered by their library systems.

Figure 46: Staff provide one-on-on support (% of libraries)

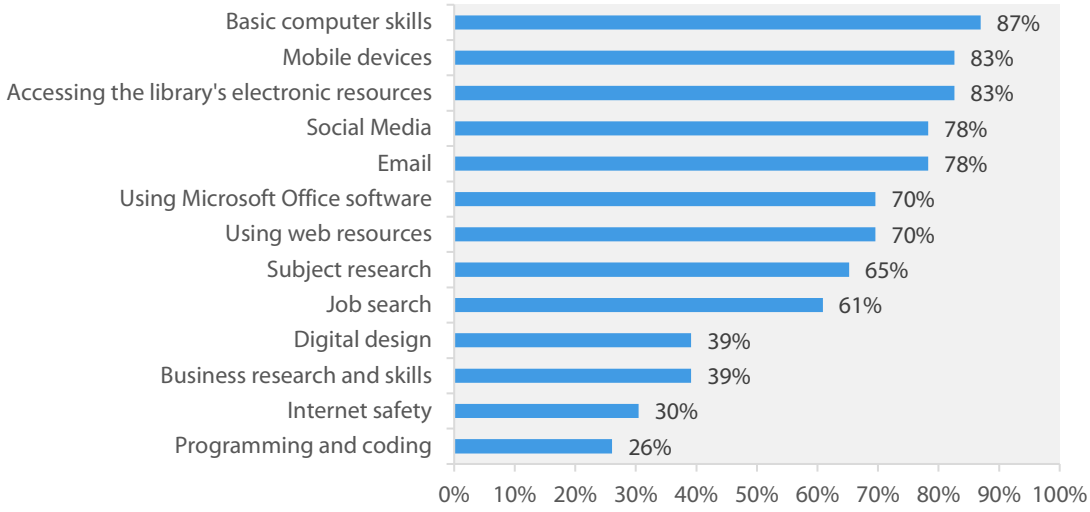
Survey question: Do you perform any one-on-one support with patrons regarding the technology services offered by your library system?



n = 25

Figure 47 shows the types of one-on-one support that the staff provided. Library staff provided a lot of support on *basic computer skills* (87%), *mobile device* (83%) and *accessing library's electronic resources* (83%).

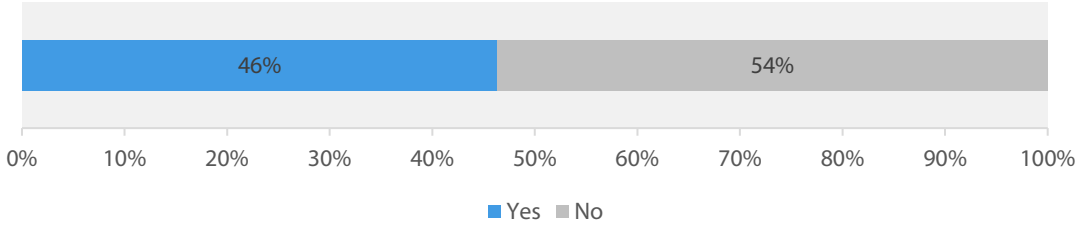
Figure 47: Staff provide one-on-on support (% of libraries)
Survey question: Which ones?((follow up to "yes" responses from Figure 46)



n = 23

Figure 48 shows that 46% of library systems reported that their staff taught technology classes in the past month.

Figure 48: Staff provide technology classes (% of libraries)
Survey question: Did you teach any of the classes offered by your library system in the last month?



n = 23

4.6 Availability and Usage Indicators

The Availability and Usage Indicators were designed to track the volume of technology services offered by library systems over time as compared to peer-based benchmarks. Availability indicators track the volume of technology services offered, such as the number of Internet-enabled public workstations. Usage indicators measure the uptake of technology services by library patrons, such as the number of participants in a technology training program.

Availability and Usage Indicators received 24 library systems contributions: 17 of them are Southern Ontario Library Service and 6 of them are Ontario Library Service-North. As the data is too spotty for an aggregated report, this report takes an example to demonstrate the value that Availability and Usage Indicators can provide.

The Availability and Usage Indicators have key metrics that can be assessed by libraries to see the quality of the connectivity services such as number of WiFi hotspots available, bandwidth etc. The average download speed reported by the 24 library systems over eight months in 2019 was 87.63 Mbps, which is more than double the national average download speed 42.4 Mbps in 2019.[11]

Libraries from Ontario Library Service - North is about 26 Mbps download speed whereas the average response from the libraries from Southern Ontario Library Service is about 100 Mbps download speed.

Among the 24 library systems making up this data point, the average response from the libraries from Ontario Library Service North is about 26 Mbps download speed whereas the average response from the libraries from Southern Ontario Library Service is about 100 Mbps download speed. The average bandwidth in the South is more than three times the North. This result shows that improved bandwidth capacity could lead to stronger outcomes, especially for communities in Northern/rural Ontario.

4.7 Linking Technology to Outcomes

This section discusses the technology services that have led to the two primary outcomes: Digital Inclusion and Digital Literacy, and how *Bridge* can help leverage specific technology services to achieve success in those outcomes. Appendix A illustrates how library technology services lead to increased primary outcomes and secondary outcomes by enabling each KPI.

In the connectivity category, *accessing Internet at a library workstation* and *borrowed WiFi hotspot* contribute to all indicators in the two primary outcomes: Digital Inclusion and Digital Literacy. In the equipment and software service category, all the technology services also contribute to the primary outcomes.

It is therefore crucial that the availability of these technology services match their demand. If the library wishes to increase a certain outcome, it is recommended they identify the technology services related to that outcome and then cross reference the reported use and awareness of those technology services. For example, a technology service with low reported use and high interest indicates the need for further action to increase awareness. A technology service with high reported use and high interest might indicate the potential to scale availability to meet demand.

Bridge provides library systems with the ability to collect and manage availability and usage data so that they can allocate resources to technology services with the highest utility. The section below illustrates in more detail using examples how a library can better inform decisions using the Bridge toolkit.

[11] Source: CIRA research, April 2019. https://cira.ca/resources/corporate/factbook/canadas-internet-factbook-2019

5. Using *Bridge* to Inform Decisions

As *Bridge* continuous to evolve and be adopted by public libraries across Ontario, it has demonstrated a capacity to create a complete and accurate picture of technology services in public libraries, measure the outcomes and impacts of services, and support transformative and responsive library service improvements. This section summarizes each survey's ability to benchmark outcomes and inform decisions. In addition, this section uses a hypothesis case to demonstrate how a library with robust datasets can target its programs and services to serve the unique needs of its communities and demonstrate the value of those services to funders and other stakeholders.

What kind of insights can you get from Patron Survey?

- Outcomes related to technology services used
- Specific experiences with technology services
- Reasons why technology services were not used
- Outcomes for a range of demographic groups

KPIs for each outcome at one glance

Primary Outcomes	Indicators for Primary Outcomes
Digital Inclusion	▪ Access to technology ▪ Use of technology for others
Digital Literacy	▪ Digital comfort ▪ New technology adoption
Secondary Outcomes	**Indicators for Secondary Outcomes**
Community, social and civic engagement	▪ Community engagement ▪ Social belonging ▪ Access to Government resources online
Creativity and innovation	▪ Making creative products
Workforce development	▪ Educational activities/lifelong learning ▪ Job search outcomes ▪ Employable skills
Entrepreneurship and business development	▪ Business outcomes ▪ Employment supported

What do KPIs tell you about each outcome and how this relates to technology services that you are offering?

The Patron Survey can provide insights on the type of technology services that patrons used, the outcomes they were able to achieve, and compare results. For example, for each KPI, library A can benchmark the results against previous months in Ontario or by respondent demographics.

By filtering key outcome areas and key performance indicators, library A can know which technology services contributed to these outcome areas. For example, among the patrons who made creative products using the library's technology services, almost 60% of patrons made digital/video works. The KPI *making creative products* therefore reveals an opportunity to increase the creativity and innovation outcome by assessing and improving existing technology services related to making

digital/video products. This could include providing more audio-visual equipment or offering more digital classes.

The Patron Survey can also provide libraries with some reasons why patrons may have not used specific technology services. For example, patrons can report whether they were aware of technology services offered by their library -- and whether they are interested in using it (now that they are aware). With that information, the library can determine which technology service might be high in demand, but that might not be adequately promoted. These results can be complemented by the comments shared by patrons about specific technology services that they have used at the library.

What kind of insights can you get from the Staff Survey?

The Staff Survey results allow library systems to benchmark staff comfort with delivering technology services against previous months, to see how the library has improved.

- To gauge how prepared frontline staff are to deliver technology services
- To capture areas where additional support can better equip staff in service delivery

How does this relate to the technology services that you are offering?

For example, library A learned that questions from patrons about fabricating machines and 3D printers were asked most often, and that staff comfort answering those questions were low. This would indicate to library A that patrons have a high interest in using the equipment, but that staff need support to improve their ability to answer questions. The Staff Survey can further provide insights into what type of additional support staff would require in order to achieve those higher comfort levels. For example, results could show that more than half of the staff in library A would like more time to use the services they provide. Based on this, library A can consider providing additional training to service staff with time built in to test and practice using the technology.

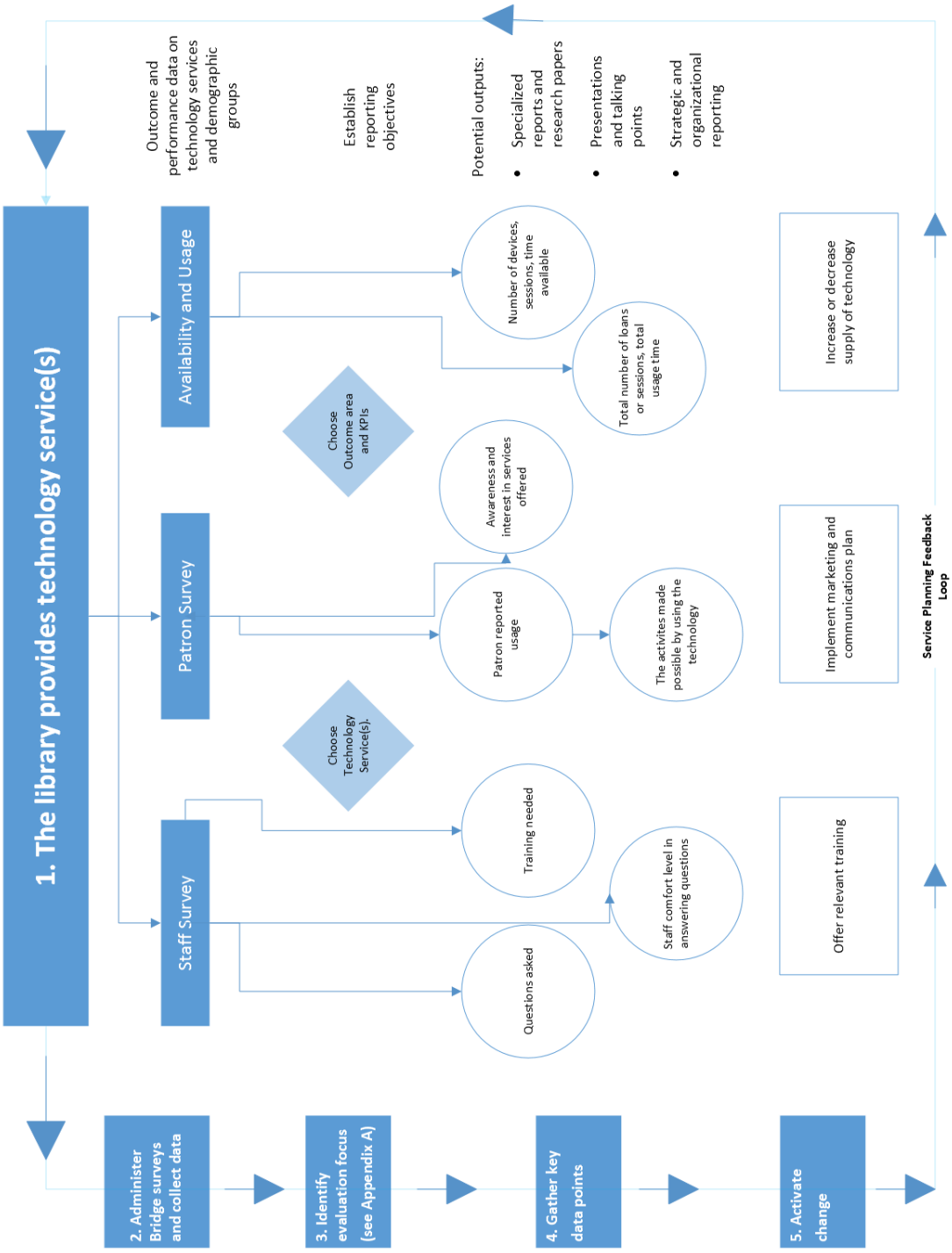
What kind of insights can you get from availability and usage indicators?

If data is collected consistently, the Availability and Usage Indicators allow the library to see usage metrics for each technology service. The library can benchmark performance against previous months or other libraries in Ontario.
For each Technology Service, you will be able to track (where data is available):

- Availability – the volume of services delivered
- Usage – the uptake of those services by library patrons

The flow chart below demonstrates a hypothesis case of how a library can use the *Bridge* toolkit to improve existing technology services given sufficient data feed and integration of data sources. In an ideal situation, the library can also use the results to inform the reallocation of resources to technology services where patron demand is higher than supply.

Flow chart of a hypothetical case



6. Key Takeaways and Recommendations

This section summarizes the key findings and learnings from the analysis, and the recommendations for future improvement on the *Bridge* toolkit.

6.1 Key Findings

The roll-out of the *Bridge* beta project received large volumes of data and certain survey questions were revised. *Bridge* has shown effectiveness in two aspects: helping libraries measure and plan their technology services as well as demonstrating data-supported evidence in the collective social impact participating library systems made.

The two-tiered outcome framework maps library technology services to six outcome areas, each of which includes one or more Key Performance Indicators (KPIs). These outcome results reflected how public libraries in Ontario benefit their communities by providing technology services.

The technology services availability section showed that *Connectivity* services are reportedly the most used technology services by patrons. The findings also suggest that some of the highly specialized services are in demand but could be better promoted by the libraries that offer them. For example, *content creation and editing software,* and *fabricating and manufacturing equipment*.

The technology support section revealed that the majority of libraries reported that the staff were able to answer most/all of the questions they received from patrons. Most commonly, staff were asked about connectivity, *Microsoft Office software, accessing electronic resources* and *basic computer skills -related technology classes*.

In the primary outcome areas, libraries played a key role in providing meaningful access to the Internet including free WiFi within and outside of libraries (after-hours) and bridging the digital divide for low-income group and teenagers (13-18). Technology services in libraries also increased patrons' competency and confidence in using digital technology, helping them succeed in the 21st century digital world.

> *"Honestly, that is a REALLY HARD ONE. Maybe our media (such as: CBC, CP-24, and even community members) should let our communities know how many awesome services we have in our libraries. I for myself whenever speak to 'strangers' in the community and making friends tell everyone to visit library and take this great opportunity for free education and enlightenment. Seriously, the citizens of this great city and province should be more aware and should more utilize this great potential from our libraries."*
>
> Patron Feedback

CBC reported in August 2019 that the high cost of Internet access in Canada leaves low-income families behind[12]. In the report, ACORN's research "Barriers to Digital Equity in Canada" also pointed out that Canadians need online access to apply for jobs, complete schoolwork, download government forms, pay bills and connect with family and friends.

The CBC report relates to the secondary outcome areas *Bridge* measured in participating libraries. By providing access to e-learning, job boards, e-government services, and specialized equipment, the public library provides critical support to vulnerable groups, government agencies, educational institutions, and cultural institutions.

6.2 Recommendations

Recommendations focus on exploring improvements to ensure the *Bridge* tool's effectiveness in informing decisions. The key areas for improvement include all stages from the beginning of data collection to final publishing.

6.2.1 Collecting the Data

All evaluation processes start from data collection. The *Bridge* Patron Survey was successful by receiving a total of **25,207** patron responses. The Staff Survey and Availability and Usage Survey showed fluctuation in response rate over the 9 months. Only a few library systems provided all the data every month, and the total number of responses decreased by month. Considering the staff capacity challenges in libraries that are less resourceful, the data collection processes used by *Bridge* can be improved in the following ways:

- Patron survey collection can happen once a year. Although the Bridge toolkit should always be available for library systems to collect surveys, library systems can determine how long they want to promote the survey based on their resources.
- Collecting Staff Survey and Availability and Usage Survey data less frequently may generate a more consistent data set. Certain specs in Availability and Usage Survey such as number of devices available or bandwidth are unlikely to change on a monthly basis.
- Collecting fewer data points may improve response rates. For example, survey questions *how frequently do you use any library service* can be merged with the question *how frequently did you visit a library branch in the last 12 months*. As well, question options can be reduced or grouped to simplify the collection process.
- Although open-text questions are valuable for testimonial collection and sharing individual stories, limiting the number of open-text questions, or allowing the user to select a specific topic to comment on would help with data quality. For example, when asking feedback on the technology services patrons used at the library, adding a list of technology services for patrons to select before providing the feedback will help identify which technology service received the most feedback.

[12] Draaisma. M, CBC News, (2019), *High cost of internet access leaving low-income families behind, report finds* https://www.cbc.ca/news/canada/toronto/barriers-to-digital-equity-acorn-canada-report-low-income-families-1.5244339

- Expand demographic questions to include all Indigenous peoples, instead of just First Nations.
- The lack of availability and usage data suggests that libraries may have trouble measuring some of the quantitative data due to the lack of a technology tool or technical knowledge. For example, some libraries might not have a method of tracking usage of the WiFi or certain software in the workstation. Or if the library uses a paper form to track computer sessions, it is likely the number will be under-reported. The Ontario government could provide resources to help libraries access data tools that capture, collect and analyze technology services.

6.2.2 Integrating Data Sources

For individual libraries to maximize the benefit of the *Bridge* toolkit, integrating data sources is a crucial step to connect the dots and draw insights to make informed decisions.

Firstly, *Bridge* functions can be further explored by benchmarking Availability and Usage Indicators against technology service categories. This linkage will likely help the library to identify the gap between a technology's service uptake and usage; In addition, setting evaluation criteria for Availability and Usage Indicators will also help libraries to gauge resources based on their own priorities. For example, a public library in a rural area might determine that a 20 Mbps download bandwidth is a good target for daily WiFi usage on average, whereas a public library in an urban area might determine that a 50 Mbps download bandwidth is a good target based on the number of users and their activities on average.

Finally, creating a recommendation engine from "interested but not used" findings will enable frontline staff and management to identify the technology services that have potential to scale impact and make efforts to raise awareness of those services. An "if/then" system can also be considered to help with selection of technology services. This logic model would indicate which services to select to best maximize the chances of addressing an outcome area. Although this logic model is not a true causal relationship, positive correlation over a long period of time is likely to indicate the effectiveness of the implementation. The continuous investment in the *Bridge* toolkit would increase performance and relevancy.

6.2.3 Analyzing and Presenting the Results

Due to strategic priorities and library systems' sometimes limited analytic capacity, a tool that does not require an advanced understanding of data analysis would greatly improve the effectiveness in generating timely and actionable insights. Specific actions that could be taken to that end include (but are not limited to) the following:

- *Bridge* tool should implement the function to export clear, flat data sets for individual analysis.
- *Bridge* could have an in-built dashboard that visualizes Patron Survey data, Staff Survey, and Availability and Usage Indicators. The dashboard should also describe what the implications for the results are by cross referencing each survey.
- A user-friendly interface and dashboard presenting results would make *Bridge* data more publishable. *Bridge* can create a searchable database, providing levels of data/information for individual libraries to reference with confidentiality.

6.2.4 Stimulating Informed Action

As illustrated in this document, public libraries in Ontario have been actively involved in bridging the digital divide and improving digital literacy. Moreover, the *Bridge* project has proven that the public library plays a key role in supporting educational institutions and government agencies, and government digital service initiatives in ICT, education, and business. The *Bridge* analysis has also illustrated libraries' ability to provide evidence-based information on the collective impact of the technology services they provide. Continuous investment in technology services would drive strong outcomes for equity-seeking groups.

Additionally, it is one of *Bridge's* core goals to help library administrators make programming decisions based on the data collected by the platform. However, to function as an effective decision-making tool for libraries, *Bridge* needs more data. Indeed, *Bridge* could (in principle) enable individual library systems to implement systems and programs to target particular outcomes (e.g., Community, Social, and Civic Engagement) for particular communities (e.g., new Canadians) by recommending the technology services that have proven to be most successful in achieving those outcomes in the past. However, for any recommendation facility to function it must collect enough observations to enable a machine learning platform – both from more participating library systems and from a longer period of time. Results from achieving (and maintaining) that level of adoption would be enhanced by the recommendations made above (e.g., easier data collection, better presentation of results, etc.).

Thus, in order to determine whether further linkages and support could leverage the technology services at the library into sustainable change in the society, the ***Bridge* project needs continuous iteration and a bigger roll-out across the province.**

Finally, bringing insights together and scaling the social impacts through *Bridge* requires a route for long-term sustainability and advanced technical implementation that needs to be supported not only by each library, but also by the provincial government. Cross-province collaboration takes time, effort, and strong leadership; thus the leading organization should be encouraged through financial support. At the advent of machine learning and artificial intelligence, *Bridge* as a beta project has potential to become sustainable which requires significant collaborative action and financial support.

Appendix A. Linking Technology to Outcomes

		Inclusive and Equitable Access		Digital Literacy and Adoption		Community, Social and Civic Engagement			Creativity and Innovation	Workforce Development			Entrepreneurship and Business Development	
		Access to Tech	Use for Others	Digital Comfort	New Technology Adoption	Civic Engagement	Social Belonging	Access to eGovernment	Making Creative Products	Educational Activities	Employable Skills	Job Search Outcomes	Business Outcomes	Employment Supported
CONNECTIVITY	WiFi access at the library	X		X		X	X	X	X	X	X	X	X	X
	WiFi Internet access outside the library (after hours)	X		X		X	X	X	X	X	X	X	X	X
	Access to Internet at a library workstation	X	X	X	X	X	X	X	X	X	X	X	X	X
	Access to Internet through a borrowed WiFi hotspot	X	X	X	X	X	X	X	X	X	X	X	X	X
EQUIPMENT AND SOFTWARE	Laptops and/or tablets borrowed for general use (at the library)	X	X	X	X	X	X	X	X	X	X	X	X	X
	Laptops and/or tablets borrowed for general use (outside the library)	X	X	X	X	X	X	X	X	X	X	X	X	X
	Devices used for entertainment	X	X	X	X	X	X			X	X			
	Assistive technology equipment	X	X	X	X	X	X	X	X	X	X	X	X	X
	Electronics, circuitry and robotics	X	X	X	X	X	X		X	X	X		X	X
	Fabricating and manufacturing equipment	X	X	X	X	X	X		X	X	X	X	X	X
	Audio-visual production equipment	X	X	X	X	X	X		X	X	X	X	X	X
	Office software	X	X	X	X	X	X	X	X	X	X	X	X	X
	Business related software	X	X	X	X					X	X	X	X	X
	Content creation and editing software	X	X	X	X	X	X		X	X	X	X	X	X
DIGITAL LITERACY	Basic computer skills	X		X	X		X	X						
	Email	X		X	X	X	X	X		X	X	X	X	X

	Accessing the library's electronic resources	X		X	X	X	X			X	X	X	X	X
	Internet safety	X		X	X	X	X			X	X		X	X
	Using Microsoft Office software	X		X	X	X	X	X	X	X	X	X	X	X
	Social media	X		X	X	X	X	X	X	X	X	X	X	X
	Using web resources	X		X	X	X	X	X	X	X	X	X	X	X
	Programming and coding	X		X	X	X	X		X	X	X		X	X
	Digital design	X		X	X	X	X		X	X	X		X	X
	Job search	X		X	X	X	X	X			X	X		
	Subject research	X		X	X	X	X	X	X	X	X	X	X	X
	Mobile devices	X		X	X	X	X	X	X	X	X	X	X	X
	Business research and skills	X		X	X					X	X	X	X	X

Appendix B. Key Terms and Definitions

Availability and Usage Indicators– Data on the volume of technology services delivered by a library system and the uptake of those services by patrons. Availability and Usage Indicators were designed to track the volume of technology services offered by library systems over time, and as compared to peer-based benchmarks.

Availability – The volume of technology services offered, such as the number of Internet-enabled public workstations.

Bridge – The Bridge Technology Services Toolkit (Bridge) is a customizable web-based solution for libraries to capture and analyze performance and outcome data on technology services and informs decision-making on the use and outcomes of technology services offered by public library systems in Ontario[13].

Beta study – The second phase of the project in which a sampling of public libraries are invited to try the product out.

Collective impact – Collective impact is a structured way to collectively define the problem and create a shared vision to solve it. It means agreeing to track progress in the same way, which allows for continuous improvement[14].

Community value – The principle or standard that the people in the community hold and maintain. It guides the community's vision and mission.

Digital Literacy – The ability to use information and communication technologies to find, evaluate, create and communicate information, requiring both cognitive and technical skills.

Digital Inclusion – How communities and individuals access the technological capacity to pursue economic and educational opportunities, and to participate in civic life.

Digital divide – Commonly understood as the gap between those that have ready and affordable access to information and communications technology, and those that do not[15].

Digital equity – Digital Equity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy[16].

First Nation – respondents that identified as being from or living in a First Nations reserve

KPI – Key Performance Indicators (KPIs) are a special subclass of metrics that are most closely aligned with an organization's critical objectives[17].

Leading indicators – The benchmarks that are designed to measure the progress towards anticipated change.

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[13] As drawn from Toronto Public Library website, "The Bridge Project - About the Toolkit"

[14] As drawn from Collective Impact Forum website, "What is collective impact".

[15] As defined "Toronto Broadband Study" by FONTUR International Inc. and MDB Insight Inc. for the City of Toronto.

[16] As defined by National Digital Inclusion Alliance, NDIA website, "Definitions".

[17] As defined by Stanford University, Stanford University Service Management website, "Establishing Service Metrics and Key Performance Indicators (KPIs)"

Low-income – respondents that identified as being low-income without income specification

Machine learning – Machine learning is a form of Artificial Intelligence (AI) that enables a system to learn from data rather than through explicit programming. Machine learning uses a variety of algorithms that iteratively learn from data to improve, describe data, and predict outcomes[18].

Metric – A quantifiable measure that is used to track and assess the status of a performance

New immigrant – respondents that identified as being New to Canada and/or has identified as having immigrated to Canada within the last 5 years

Older Adults – respondents that identified as being between the age of 55-64

Older Patrons – the combination of Seniors and Older Adults

Outcome data – Outcome data are collected through Patron Survey generated by Bridge, which is distributed by the library systems to patrons that have used technology services. Outcomes are the kinds of activities and results that technology services have enabled for patrons.

Outcome framework – In this project, the outcome framework is a map that links library technology services to six outcome areas, each of which includes one or more Key Performance Indicators (KPIs). Together, the six outcomes create a framework to measure and benchmark how technology access in public libraries improves the lives of residents across Ontario

Pilot study – a small-scale experiment conducted among libraries to evaluate feasibility and improve upon the study design prior to perform the full-scale roll out of the project.

Seniors – respondents that identified as being over the age of 65

Service delivery – Technology services that frontline staff deliver such as answer technical and other questions about the technology services they support.

Usage – Uptake of technology services by library patrons, such as the number of participants in a technology training program.

Visible Minority – respondents that identified as being from any visible minority community

Youth – respondents that identified as being between the age of 13-18

Young Adults - respondents that identified as being between the age of 19-24

Younger Patrons – the combination of Youth and Young Adults

[18] As drawn from IBM website, "What is machine learning?"

Nordicity

Description of Key Performance Indicators

Outcome	Key Performance Indicator	Description of data point
Digital Inclusion	Access to Technology	▪ Access to technology by patrons without alternative means of access ▪ Reasons for using technology at public library if alternative access point is available (e.g., gaps in or competition for access at home, convenience of location, etc.)
	Use for Others	▪ Use of technology service(s) by patrons on behalf of someone else (e.g., parents, children, elderly person, etc.)
Digital Literacy	Digital Comfort	▪ Increased comfort with digital technologies as a result of using technology service(s) at the library
	New Technology Adoption	▪ Introduction to new technology ▪ Continued use of new technology
Increasing Community, Social and Civic Engagement	Increased Community Engagement	▪ Increased feeling of community engagement among patrons ▪ Top activities contributing to increase in feelings of community engagement
	Increased Social Belonging	▪ Increased feeling of social belonging among patrons ▪ Top activities contributing to increase in feelings of social belonging
	Access to government resources online.	▪ Use of technology service(s) at library to access government resources online ▪ Top categories of eGovernment resources accessed
Creativity and Innovation	Making Creative Products	▪ Use of technology service(s) to make creative products ▪ Types of creative products made
Entrepreneurship and Business Development	Business Outcomes	▪ Business activities undertaken using technology service(s) at the library (e.g., starting a business, connecting with potential patrons, etc.)
	Employment Supported	▪ Number of people employed by businesses using technology service(s) at the library for business-related purposes
Workforce Development	Educational Activities/Lifelong Learning	▪ Use of technology service(s) for educational activities (e.g., applying to enroll in a degree or certificate program, taking an online class or workshop) ▪ Top educational activities enabled by technology services
	Employment Skills	▪ Use of technology service(s) to develop employment skills (e.g., management skills, administrative skills, technical skills, etc.) ▪ Top employment skills developed as a result of technology services
	Job Outcomes	▪ Use of technology service(s) to develop skills related to finding a job (e.g., accessing job boards, building a resume, preparing for an interview, etc.) ▪ Patron success in finding a job

Appendix C. List of library Systems

Bridge project gained participation from 50 public library systems from across Ontario. 38 library systems collected data. These library systems include:

1. Ajax Public Library
2. Atikokan Public Library
3. Caledon Public Library
4. Chatham-Kent Public Library
5. Chippewas of Rama First Nation Library
6. Clarence-Rockland Public Library
7. Gananoque Public Library
8. Greenstone Public Library
9. Haliburton County Public Library
10. Hamilton Public Library
11. Innisfil ideaLAB & Library
12. Kapuskasing Public Library
13. Kawartha Lakes Public Library
14. Kenora Public Library
15. Kingston-Frontenac Public Library
16. Kitchener Public Library
17. Markham Public Library
18. Mattawa Public Library
19. Mississauga Library
20. Newmarket Public Library
21. Niagara Falls Public Library
22. North Bay Public Library
23. Orillia Public Library
24. Oshawa Public Library
25. Perth Union Library
26. Powassan & District Union Public Library
27. Richmond Hill Public Library
28. St. Thomas Public Library
29. Stratford Public Library
30. Temagami First Nation Library
31. Temagami Public Library
32. Temiskaming Shores Public Library

33. Thunder Bay Public Library
34. Toronto Public Library
35. Vaughan Public Library
36. Whitchurch-Stouffville Public Library
37. Wikwemikong Public Library
38. Windsor Public Library

12 of the 50 library systems did not collect any data due limited resources. These library systems include:

1. Bkejwanong First Nation
2. Burlington Public Library
3. Dryden Public Library
4. Fort Frances Public Library
5. French River Public Library
6. Mississauga First Nations Library
7. Naotkamegwanning First Nations Library
8. Oliver Paipoonge Public Library
9. Sachigo Lake First Nations Library
10. Saugeen First Nation Library
11. Sioux Lookout Public Library
12. Six Nations First Nation Library