



**Public Library Association**

# **2020 Public Library Technology Survey**

**Summary Report**

# Executive Summary

## Overview

Public libraries have long served as both an essential thread in our nation's digital safety net and a launch pad for learning and exploring technology applications, services, and devices. The 2020 Public Library Technology Survey provides the most current and complete snapshot of public library technology capacity, including resources for library patrons, technology infrastructure, digital literacy, and technology staff and budget. While significant differences exist among city, suburban, and town/rural libraries, survey results show how libraries of all sizes continue to serve as hubs for digital equity in their communities. Findings include:



**Almost one-third (32.6%) of public libraries offer internet hotspots for check out.**



**Less than half of public libraries (43.7%) increased their bandwidth in the last two years, and more than one-third (34.6%) are unable to improve bandwidth because faster speeds are not available.**



**More than one-third (36.7%) of public libraries have dedicated staff for digital literacy and technology programs and training.**



**More than 88% of all public libraries offer some kind of formal or informal digital literacy programming.**



**Nearly half of public libraries (48.7%) provided streaming public programs (e.g., with remote speakers) in the previous 12 months.**



**One in five public libraries (20%) provide access to 3D printers.**

The findings are particularly relevant as the COVID-19 pandemic exposed persistent digital divides nationwide. New data related to libraries circulating technology for patron use off-site and technology-enabled programs and services reflect some of the ways libraries extended their reach, even when their buildings were closed temporarily to the public. While the data presented in this report was collected during the height of the pandemic, that was not the survey's focus.<sup>1</sup> Libraries were asked to report technology as usually available, whether before or during the pandemic or if the library planned to make the technology available again in the future.

The Public Library Association fielded the survey in fall/winter 2020 to a nationally representative sample of public library administrative entities (AE). About 80% of AEs are single-outlet libraries, and the remainder are multi-branch library systems. The survey response rate was 62.2 percent.

## About the Survey Data

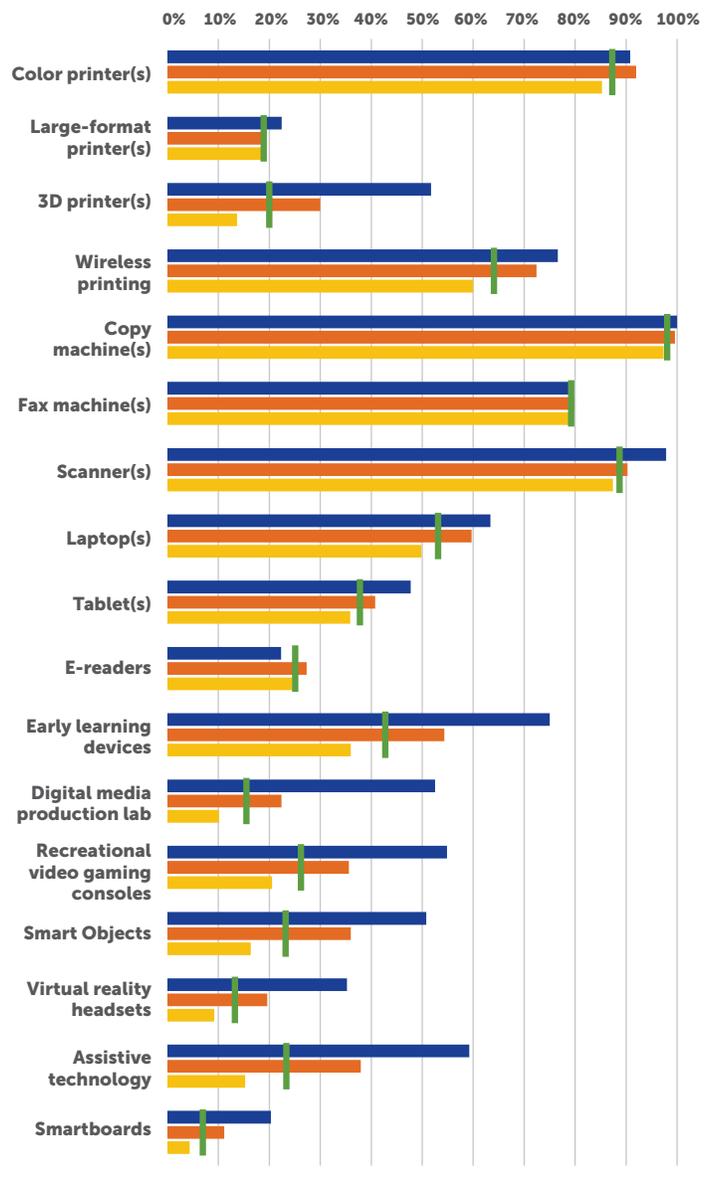
PLA fielded the Public Library Technology Survey in collaboration with the American Institutes for Research (AIR). The survey was similar in content to the Digital Inclusion Survey<sup>2</sup> and its predecessors dating back roughly two decades. While the surveys have differed slightly in sampling methods, the 2020 data nonetheless affirm and continue to document how public libraries are adapting to changing needs and adopting emerging technology devices and applications to serve diverse communities. The data also continue to show persistent gaps in available public technology resources and staffing among city, suburban, and town/rural libraries.

Using data from the Institute of Museum and Library Services (IMLS) Public Libraries Survey, the sample was designed to be representative of U.S. public libraries (for more detail [see page 11](#)). In the charts below, this report highlights percentages for public libraries overall and by locale type. Locale indicates the level of urbanization of a given location, with libraries divided into the categories of city, suburban, and town/rural.

## Library Resources for Patrons

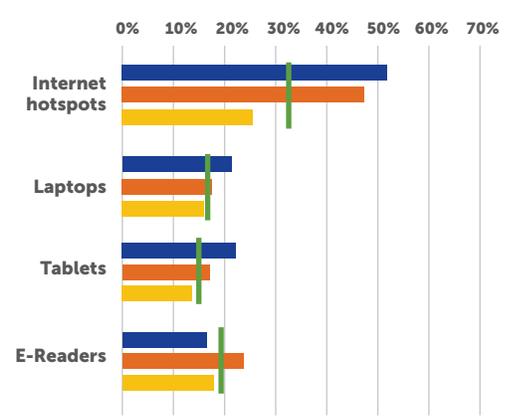
U.S. public libraries provide a range of technology resources inside library buildings and, increasingly, extending beyond their grounds. Among the questions in this section, the survey asked about on-site technology, circulating technology (i.e., devices available for patrons to check out), and technology-enabled services or resources (e.g., e-books and online job resources).

Among the newer technologies available in public libraries, **Figure 1**



**Figure 1.** Percentage of public libraries offering technology for on-site patron use

■ City ■ Suburb ■ Town/Rural ■ Overall



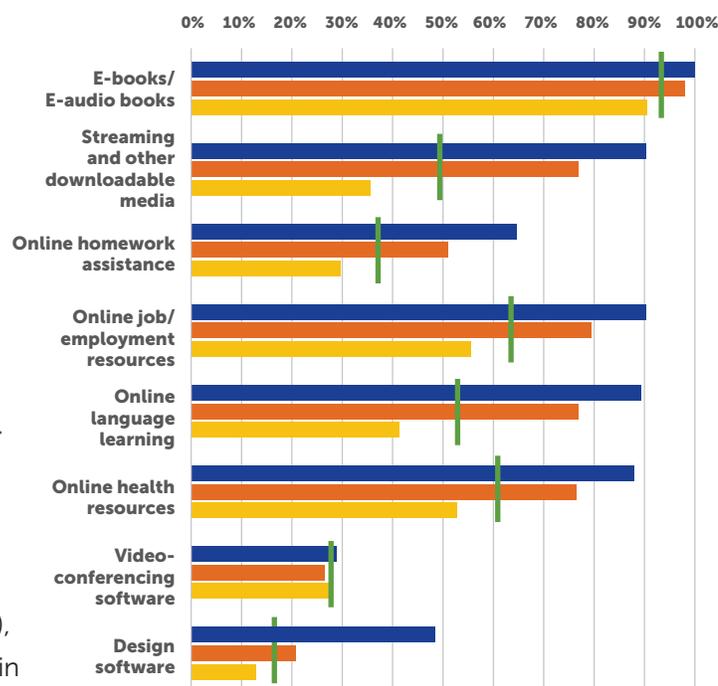
**Figure 2.** Percentage of public libraries circulating technology for off-site patron use

■ City ■ Suburb ■ Town/Rural ■ Overall

shows that a majority of city libraries (51.7%), compared with 30% in suburban and 13.7% in town/rural libraries, now provide access to 3D printers. Less than 3% of all library locations reported offering this service in the 2014 Digital Inclusion Survey. Disparities can also be seen with digital media production labs (52.5% in city libraries compared with 10.2% in town/rural libraries), early learning devices (75% in city and 36% in town/rural), and virtual reality headsets (35.2% in city and 9.2% in town/rural). Wireless printing (64.1%) and laptops (53.1%) are available in a majority of all libraries. [Table 2](#) of the report that follows provides complete data.

When libraries were forced to close to the public due to health and safety guidelines, many boosted their Wi-Fi signals to extend further and made technology available for check out.<sup>3</sup> Overall, half of all libraries (50.1%) provide some technology for use outside the library. **Figure 2** shows that circulating internet hotspots is the most common of these, provided by more than half of city libraries (51.8%), nearly half of suburban libraries (47.4%) and more than a quarter of town/rural libraries (25.5%), where cellular data coverage for hotspots is more likely to be unreliable.

The most widely available technology-enabled service or resource is e-books and e-audiobooks, which more than 90% of all public libraries offer (**Figure 3**). More than half of all libraries also provide access to online job and employment resources (63.5%), online health resources (60.7%) and online language learning (53.1%). Streaming and other downloadable media (e.g., video, music, and magazines) are available at 49.1% of all libraries. Coming on the heels of advocacy for improved library access, licensing terms and pricing for digital resources,<sup>4</sup> the 2020 survey also asked about the most common impediments libraries faced in providing digital content (e.g., e-books) and strategies they are pursuing to improve public access (e.g., consortium purchasing). [Tables 15 and 16](#) in the report that follows detail library responses.



**Figure 3.** Percentage of public libraries offering technology-enabled services or resources to patrons—including both subscription services and resources curated by the library system

■ City ■ Suburb ■ Town/Rural ■ Overall

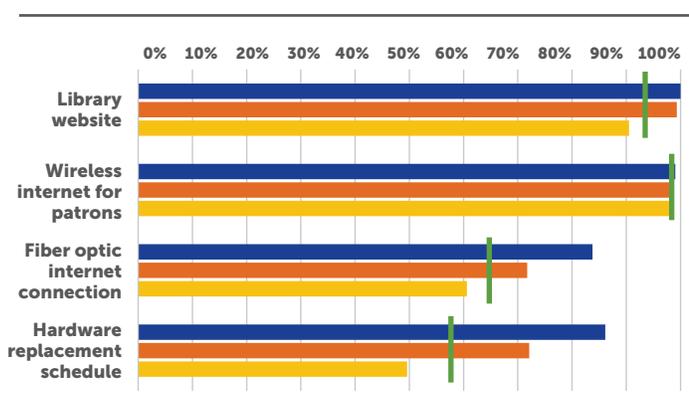
## Library Technology Infrastructure

As anyone following politics in recent years knows, the definition of “infrastructure” is contested. Widely agreed, though, is that it is foundational physical and organizational structures needed for the operation of an enterprise—libraries in this case. This section of the PLA survey took an inclusive approach—from library websites as enablers of access to library “virtual branches” to subscribed broadband and public Wi-Fi to computers and firewalls. While most of this infrastructure is invisible to the public and to policymakers, it is essential to fulfilling libraries’ digital equity promise. As one example, one in four town/rural libraries report that broadband limitations impede their offerings of digital content (see [Table 15](#) of the report that follows). Poor broadband capacity impacts both the number of devices that can be supported for simultaneous use, and the type of applications that may be fully enabled. Streaming media, virtual classrooms, and telehealth, for instance, demand higher-quality and faster internet speeds.

**Figure 4** shows that public Wi-Fi access is ubiquitous across all library types, and provision of a library website nearly so. Most noteworthy is that 64.7% of all libraries report fiber optic connections. Fiber optic technology uses light signals to send data, making it faster, more reliable, and generally more flexible for future upgrades. In the 2014 Digital Inclusion Survey, roughly 44% of library outlets reported this was the case. While not directly comparable, the 2020 data is directionally promising and also consistent relative to the gap between city (83.8% with fiber), suburban (71.7%) and town/rural libraries (60.6%).

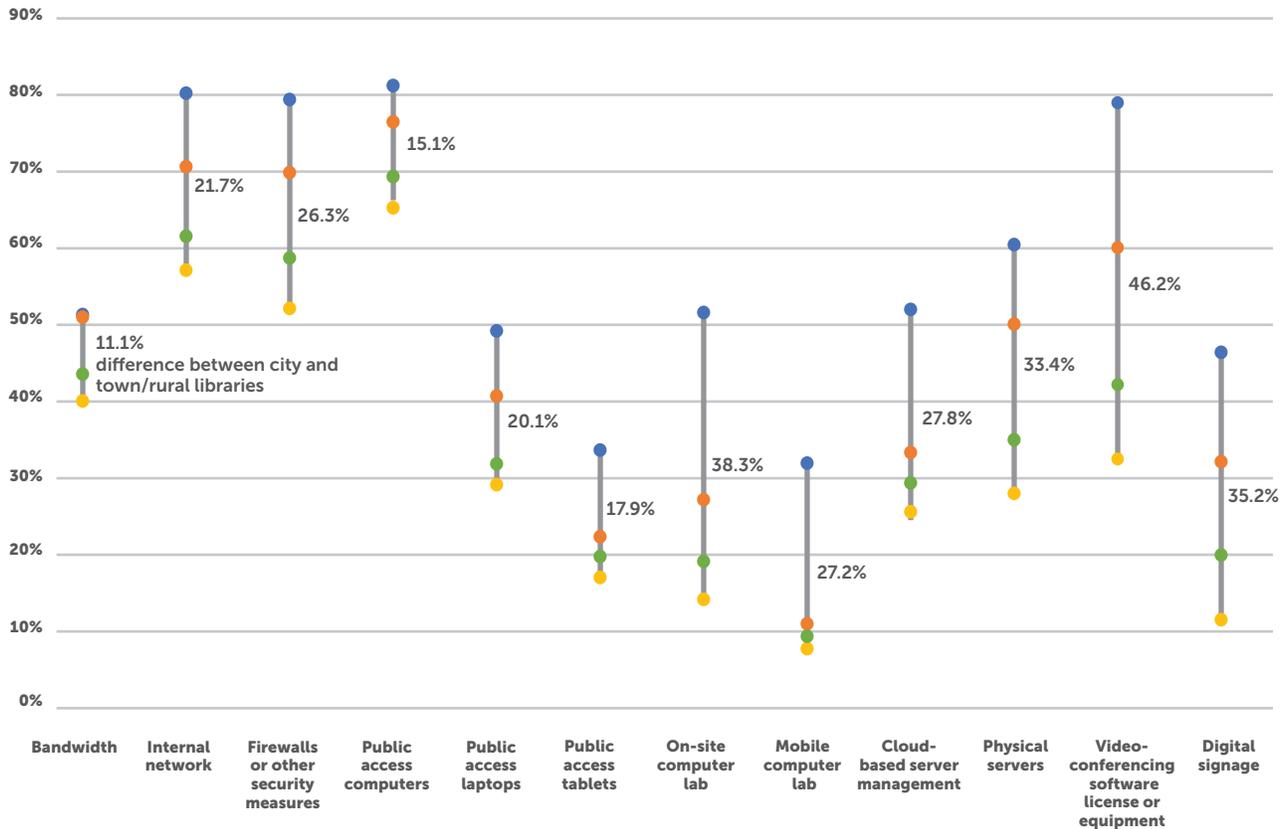
Most libraries (84%) report their internet speeds on public computers are sufficient “often” (as opposed to rarely, or sometimes), with town/rural libraries reporting the least sufficiency. Eighteen percent of town/rural libraries report speeds are sometimes (15.3%) or rarely (2.7%) sufficient for patrons. Wi-Fi speeds “often” meet patrons’ needs for 79.2% of libraries overall. Unfortunately, a significant percentage of libraries (about 35%) did not answer the question about their subscribed download and upload speeds for their internet service. [Tables 7](#) and [8](#) in the report provide more detail on library broadband speeds. Limiting factors that constrain libraries’ ability to improve broadband connectivity (see [Table 9](#)) include speeds available in the area (43.2% of town/rural libraries report this as a factor) and cost (reported by 34% of libraries overall).

Almost 93% of libraries reported having upgraded their bandwidth, their internal network connections (e.g., routers or cabling), or firewalls/security measures within the previous 24 months.



**Figure 4. Infrastructure**

■ City ■ Suburb ■ Town/Rural ■ Overall



**Figure 5.** Infrastructure components added, replaced, or upgraded within the past 2 years. Percentage labels on the chart indicate the difference between city libraries and town/rural libraries.

■ City ■ Suburb ■ Town/Rural ■ Overall

However, within each of these categories there is wide variation by locale. For example, only 40.4% of town/rural libraries have upgraded their bandwidth, compared to 51.4% of city libraries. The overall highest percentage response was 69.8% of all libraries reporting upgrades to library desktop computers. This tracks with **Figure 4**, which shows a majority (57.4%) of libraries have hardware replacement schedules in place, while other upgrades are less likely to have a set timetable. Town/rural libraries lag behind their city and suburban peers in all infrastructure categories by about 10% or as much as 46.2% as with videoconferencing software licenses relative to city libraries (**Figure 5**).

## Digital Literacy & Technology-Enabled Programs

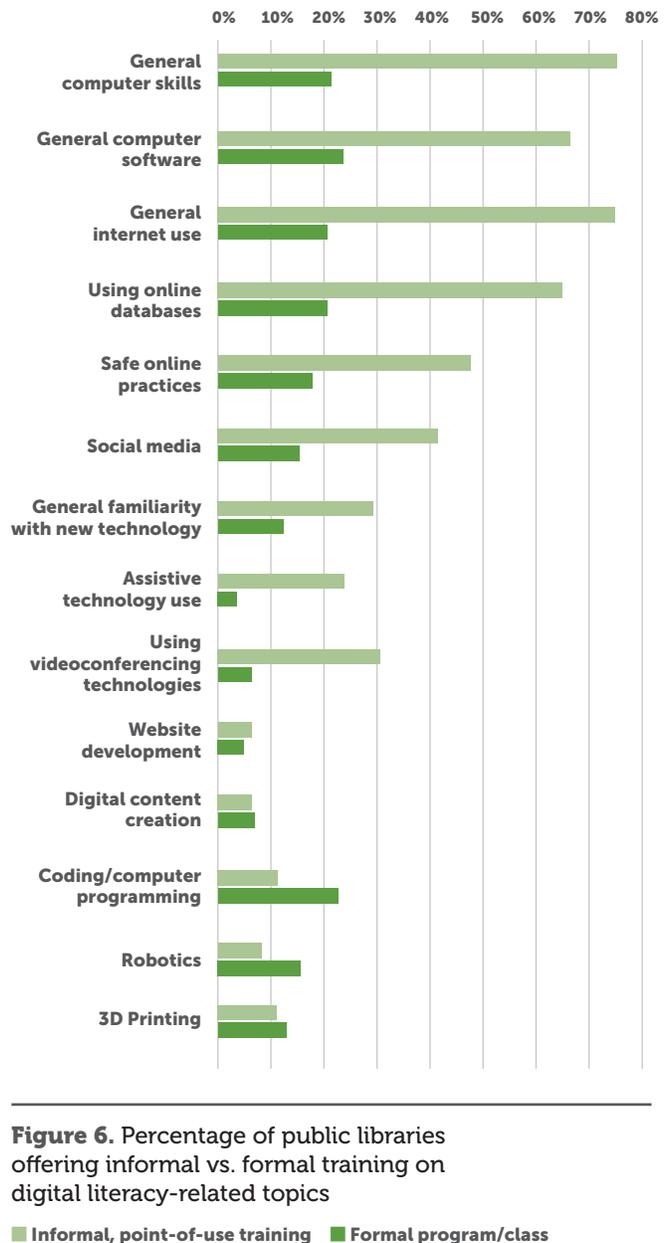
In addition to providing access to technology, public libraries offer training and assistance to help patrons use that technology. Training can take the form of formal programs or classes and/or informal or point-of-use training on technology and related skills. Overall, 88.3% of libraries offer some type of programming or training for patrons on digital literacy skills. It is much more likely to be informal,

meaning one-one-one technology help provided by a library staff member or volunteer upon patron request. Almost 85% of libraries provide some type of informal training, while only 42% provide formal programs or classes in the same areas (Figure 6).

The capacity of libraries to offer training varies by locale (Figure 7). The difference between city and town/rural libraries is less than 15% for training on general computer skills, general internet use, safe online practices, videoconferencing technologies, and website development. The difference is largest in the area of coding/computer programming, which is offered by 65.1% of city libraries, but only 22% of town/rural libraries. Among both suburban and town/rural libraries, the most common type of formal programs or classes are in computer software (e.g., word processing, presentation), while the most common informal point-of-use training is in general computer skills (e.g., how to use a mouse and keyboard). Among city libraries, the most common type of formal program/class is in coding/computer programming, while the most common informal training is in general internet use (e.g., web searching). (See Table 11.)

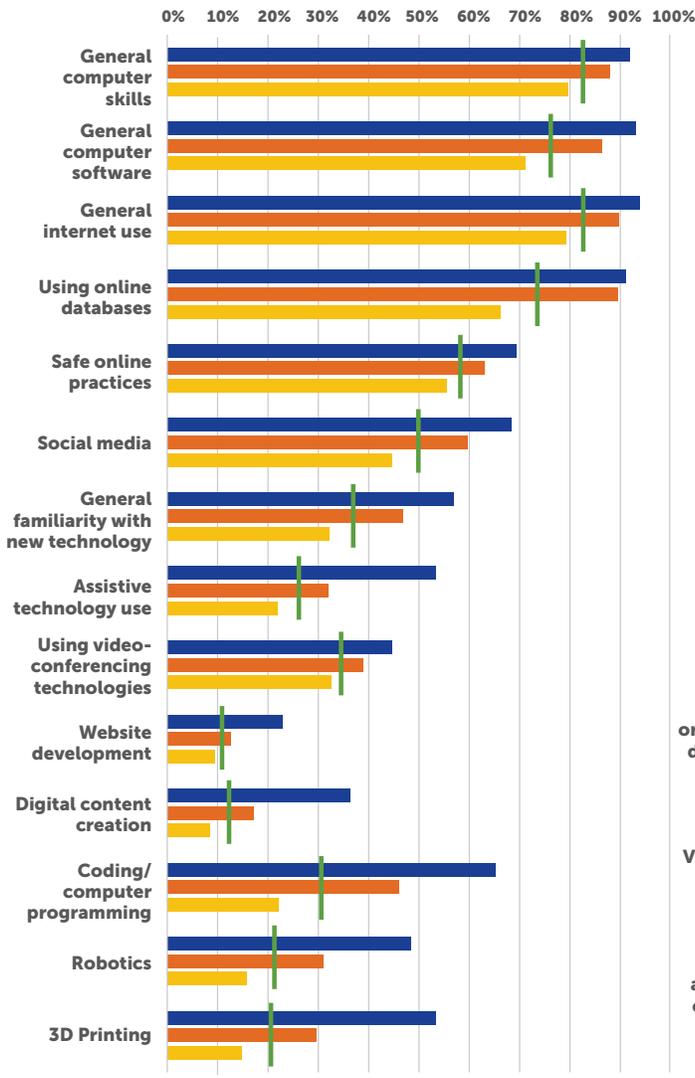
The impact of the COVID-19 pandemic is perhaps best illustrated by the technology-enabled programs and services public libraries formally offered alone or in partnership with other organizations (Figure 8). At the time of the survey, almost half (48.7%) of all public libraries had offered streaming public programs, while 42.6% had offered online discussion forums such as book groups or community forums. This is consistent with an earlier PLA survey that found a majority of responding public libraries had launched virtual programming after the start of the pandemic.<sup>5</sup>

When asked about the greatest challenges that the library faces in providing digital literacy assistance or training, respondents identified personnel, finances, infrastructure, community



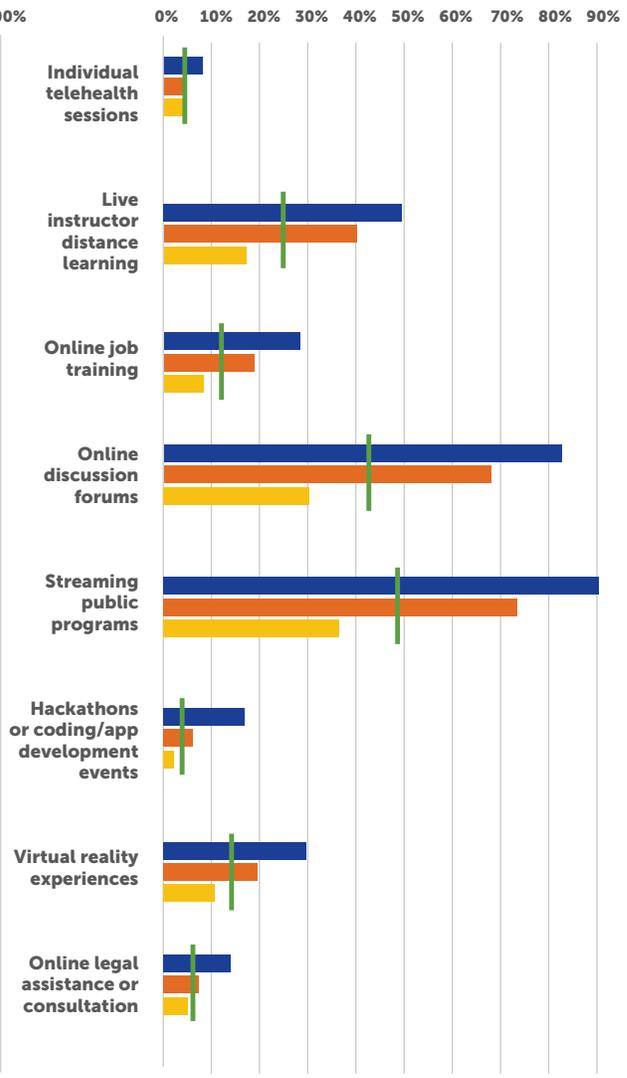
**Figure 6.** Percentage of public libraries offering informal vs. formal training on digital literacy-related topics

■ Informal, point-of-use training ■ Formal program/class



**Figure 7.** Percentage of public libraries offering digital literacy-related training (formal or informal) by locale

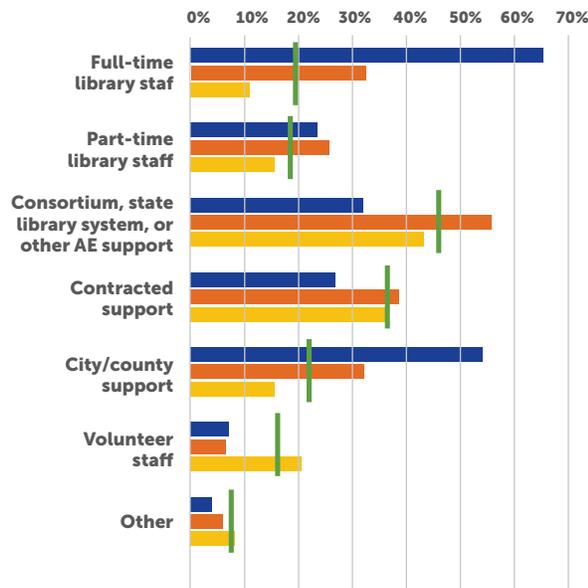
■ City ■ Suburb ■ Town/Rural ■ Overall



**Figure 8.** Percentage of public libraries offering formal technology-enabled programs or services in the past 12 months

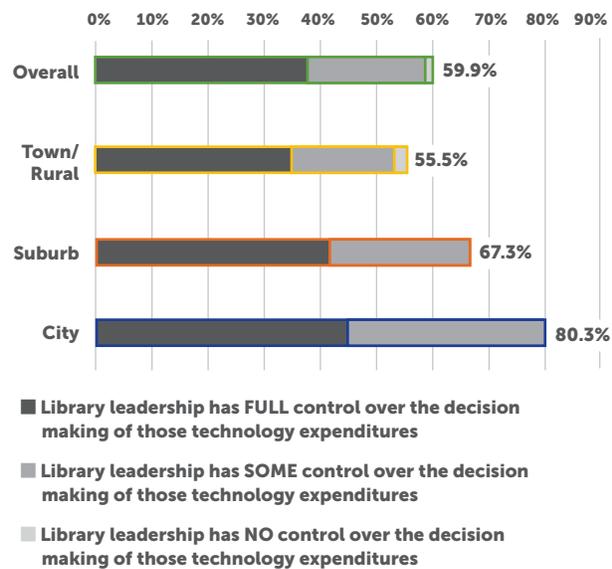
■ City ■ Suburb ■ Town/Rural ■ Overall

characteristics, and COVID-19. Staff challenges include a lack of time or expertise. Funding and infrastructure for training are related, as libraries may lack the funds to purchase the necessary equipment or software. COVID-19 has limited how libraries can assist users with technology, without the ability for staff to sit “elbow to elbow” with patrons to walk them through what they need. Often virtual trainings cannot reach people who require help to access the virtual training: the people who quite possibly most need it are those who cannot reach it. Demographics factor into this, as communities with high proportions of rural, elderly, or poor residents may be most at risk of falling further behind in the digital divide.



**Figure 9.** Types of IT support staff. IT support staff are those dedicated to maintaining the information technology services and resources available at the library, and assisting library patrons with using these products.

■ City ■ Suburb ■ Town/Rural ■ Overall



**Figure 10.** Percentage of public libraries with specific budgets for technology expenditures and the level of control over that budget. Percentage labels indicate the total percentage of libraries with a budget line item(s) or funding designated specifically for public access technology. Stacked bars indicate the level of library control over that budget.

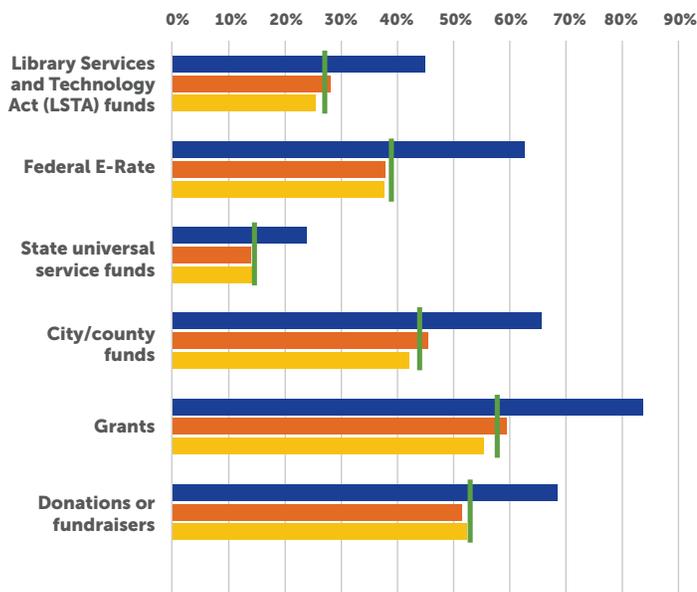
## IT Staffing and Funding

The final section of the survey focused on funding and the human “infrastructure” (i.e., staff) to support library technology offerings in their communities. **Figure 9** details the types of IT support libraries have in place. Respondents could choose more than one option, and the most common for all libraries was IT support through a consortium, state library, or other administrative entity (45.9%). City libraries are more than twice as likely to report having full-time library IT staff (65.4%) compared to suburban libraries (32.5%) and almost six times as likely as town/rural (11%). A majority (54.1%) of city libraries also have access to city/county IT staff. Town/rural libraries are more than twice as likely to use volunteer IT staff (20.5%) than city (7.1%) and suburban (6.5%) libraries. Town/rural libraries also were the most likely to report that lack of staff expertise (18.7%) was an impediment to improving broadband, compared to 8% of suburban and 6.5% of city libraries (see [Table 9](#)).

The Public Libraries Survey jointly administered by the Institute of Museum and Library Services and state library administrative agencies collects information on operating expenditures in three categories: staff, collections, and “other.”<sup>6</sup> The “other” category would include technology-related expenditures. At a more granular level, **Figure 10** shows that a significant majority (59.9%) of public libraries have budget line items or funding specifically for public access technology within their budgets. Of these, however, only 38.2% have full control over these expenditures, and more than 20% of libraries did not respond as to whether they had full, some, or no control over these expenditures. Because a majority of public

libraries are established as units of city, county, or parish government, these entities likely retain significant decision-making authority.

Finally, **Figure 11**, speaks to other revenue sources outside the operating budget, including federal, state, and local government funds, as well as grants and donations. A majority of all libraries supplement their operating budgets with grants (57.9%) and donations or fundraisers (52.9%). Additional detail related to the federal E-rate program is available in [Table 20](#).



**Figure 11.** Percentage of public libraries using revenue sources outside of the operating budget for technology expenditures

■ City ■ Suburb ■ Town/Rural ■ Overall

## Conclusion

The results of PLA’s 2020 Public Library Technology Survey provide essential information about libraries’ digital

resources and capacity, as well as trends to watch and persistent issues to address. Key among these issues is digital equity: for everyone to participate fully in a shared digital future, fast, affordable broadband infrastructure and technology-related training and support are needed for libraries and the communities we serve.<sup>7</sup> This work has already begun, such as through ALA’s successful advocacy for federal recovery funding for libraries and library staff and PLA’s digital literacy initiatives.<sup>8</sup> Going forward, ALA and PLA will continue to work closely with public and private funders and other national partners to amplify, advocate for, and strengthen the vital roles public libraries play in their communities.

## Notes

1. COVID-specific library surveys can be found at: [ala.org/tools/covid/data-research](https://ala.org/tools/covid/data-research).
2. Information about the Digital Inclusion Survey is available at: [ala.org/tools/research/digitalinclusion](https://ala.org/tools/research/digitalinclusion).
3. Data and examples provided in Libraries Respond to COVID-19 [fact sheet](#).
4. For more information, please visit [ala.org/pla/issues/ebooklending](https://ala.org/pla/issues/ebooklending).
5. Public Library Association, “Public Libraries Respond to COVID-19” (March 2020): [ala.org/pla/issues/covid-19/march2020survey](https://ala.org/pla/issues/covid-19/march2020survey).
6. Institute of Museum and Library Services, Public Libraries Survey: [imls.gov/research-evaluation/data-collection/public-libraries-survey](https://imls.gov/research-evaluation/data-collection/public-libraries-survey).
7. ALA Broadband Advocacy: [ala.org/advocacy/broadband](https://ala.org/advocacy/broadband).
8. PLA Digital Literacy initiatives: [ala.org/pla/initiatives/digitalliteracy](https://ala.org/pla/initiatives/digitalliteracy).



# 2020 Public Library Technology Survey Detailed Results

## Background

In fall 2020 the Public Library Association, in collaboration with the American Institutes for Research (AIR), fielded the Public Library Technology Survey to a nationally representative sample of public libraries.<sup>1</sup> The survey was similar in content to the Digital Inclusion Survey<sup>2</sup> and its predecessors dating back roughly two decades. These earlier studies used library outlets as the unit of analysis, but the PLA 2020 survey used the library “administrative entity” (AE) because of the extensive data about each AE available from the Public Libraries Survey; these data were essential to the sample design and for post-survey weighting (see [Appendix A](#)).

The sample was designed to be representative of public libraries by region<sup>3</sup>, governmental/legal structure<sup>4</sup>, locale<sup>5</sup>, and the demographics of the library’s census tract.<sup>6</sup> These characteristics were selected by using a classification and regression tree procedure that identified characteristics that most often predicted differences among groups of public libraries based on per-person output metrics. The percentages presented in this report are estimates of the percentage of all public libraries in the United States calculated by weighting responses to the survey. (See [Appendix A](#) for more detailed information about the sample design, survey methodology, and weighting procedure.) Locale is a common geographic indicator of the level of urbanization of a given location. Table 1 shows the total number of public libraries that the sample represented by locale, which are the denominators for all percentages in this report. For most tables in this report, percentages will not sum to 100 because respondents could select more than one option.

**Table 1.** Number of Public Libraries and Approximate Total Population of Service Areas, by Locale

Locale	Number of Public Libraries	Number of Single Outlet Libraries	Number of Multiple Outlet Libraries	Approximate Total Population of Library Legal Service Areas
City	480	150	330	113 million
Suburb	2,364	1,857	507	137 million
Town/Rural	6,334	5,455	879	74 million
Overall	9,178	7,462	1,716	324 million

NOTE: Sample frame excluded libraries in U.S. outlying areas, California county law libraries, and libraries that did not operate a stationary location (i.e., only operated bookmobiles). Population totals aggregate the population of each public library, even if some of the population is served by more than one public library. SOURCE: Sample frame based on the FY 2018 Public Libraries Survey, Library System (AE) data file.

## Public Access Technology

Table 2 lists the different technologies that public libraries make available for patron use at the library. Copy machines are almost universally available (98.1 percent), and color printers, scanners, and fax machines are all available in more than three-quarters of public libraries.

**Table 2.** Percentage of Public Libraries Offering Technology for On-Site Patron Use, by Locale

Technology	City	Suburb	Town/Rural	Overall
Color printer(s)	90.8%	92.0%	85.3%	87.3%
Large-format printer(s)	22.4%	18.8%	18.7%	18.9%
3D printer(s)	51.7%	30.0%	13.7%	20.0%
Wireless printing	76.6%	72.4%	60.0%	64.1%
Copy machine(s)	100.0%	99.6%	97.3%	98.1%
Fax machine(s)	79.7%	79.8%	79.0%	79.2%
Scanner(s)	97.9%	90.3%	87.4%	88.7%
Laptop(s)	63.4%	59.7%	49.8%	53.1%
Tablet(s)	47.7%	40.8%	35.9%	37.8%
E-readers	22.3%	27.3%	24.4%	25.1%
Early learning devices (e.g., AWE station)	75.0%	54.3%	36.0%	42.7%
Digital media production lab (e.g., lab with hardware/software for creating videos, scanning content, editing digital photos)	52.5%	22.4%	10.2%	15.5%
Recreational video gaming consoles (e.g., PlayStation, Xbox)	54.9%	35.6%	20.5%	26.2%
Smart objects (e.g., LittleBits, Arduino)	50.8%	36.0%	16.4%	23.2%
Virtual reality headsets (e.g., Oculus)	35.2%	19.6%	9.2%	13.2%
Assistive technology (e.g., screen readers)	59.2%	38.0%	15.3%	23.4%
Smartboards	20.3%	11.2%	4.4%	6.9%
Other	8.0%	7.1%	3.7%	4.8%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 3 lists the different technologies that public libraries circulate for patron use *outside* the library. Except for internet hotspots, fewer than one-quarter of public libraries (overall and by locale) circulate any specific technology for patron use outside the library.

**Table 3.** Percentage of Public Libraries Circulating Technology for Off-Site Patron Use, by Locale

Technology	City	Suburb	Town/Rural	Overall
Internet hotspots	51.8%	47.4%	25.5%	32.6%
Laptops	21.4%	17.6%	16.0%	16.7%
Tablets	22.2%	17.0%	13.7%	15.0%
E-Readers	16.5%	23.7%	17.9%	19.3%
Other	9.4%	10.2%	3.5%	5.6%
Any of the above	65.4%	62.4%	44.4%	50.1%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 4 shows the various technology-enabled services and resources that public libraries make available to patrons. The most widely available service or resource was e-books and e-audiobooks, which 93.0 percent of all public libraries offer. Online job and employment resources were the next most frequently offered (63.5 percent). Streaming and other downloadable media and online language learning are offered by about half of public libraries.

**Table 4.** Percentage of Public Libraries Offering Technology-Enabled Services or Resources to Patrons, by Locale

Service or Resource	City	Suburb	Town/Rural	Overall
E-books/E-audio books (e.g., Overdrive)	100.0%	98.1%	90.6%	93.0%
Streaming and other downloadable media (e.g., Kanopy, Hoopla, Zinio, Freegal)	90.4%	76.9%	35.6%	49.1%
Online homework assistance (e.g., Brainfuse, tutor.com)	64.6%	51.0%	29.6%	36.9%
Online job/employment resources (e.g., Learning Express)	90.4%	79.4%	55.6%	63.5%
Online language learning (e.g., Mango)	89.5%	76.8%	41.4%	53.1%
Online health resources (e.g., Medline Plus, Health.gov)	88.0%	76.5%	52.7%	60.7%
Videoconferencing software (e.g., Adobe Connect, GoToMeeting, Zoom, etc.)	28.8%	26.6%	27.6%	27.4%
Design software (e.g., Adobe InDesign, Photoshop)	48.4%	20.9%	12.9%	16.8%
Other	9.9%	7.0%	2.5%	4.0%
Any of the above	100.0%	99.5%	94.7%	96.2%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 5 shows several mobile-enabled technologies that public libraries offer. More than half (52.0 percent) of all public libraries offer mobile apps to access library services, and 62.6 percent have a website optimized for mobile devices.

**Table 5.** Percentage of Public Libraries Offering Mobile-Enabled Technologies, by Locale

Technology	City	Suburb	Town/Rural	Overall
Mobile-optimized website	88.9%	81.0%	53.8%	62.6%
Mobile apps to access library services	71.1%	66.8%	45.0%	52.0%
QR codes	40.9%	27.4%	10.7%	16.6%
Mobile-enabled printing services	62.4%	58.1%	27.3%	37.1%
Other	1.3%	1.4%	0.6%	0.8%
Any of the above	97.7%	92.3%	67.9%	75.7%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

The survey also asked if respondents conduct technology-based mobile outreach in their communities, typically via a mobile laptop lab or other “tech-mobile.” Overall, 16 percent of all public libraries do so; 47.1 percent of city, 20.7 percent of suburban, and 11.9 percent of town/rural libraries.

## Infrastructure

Table 6 includes results from several independent questions about infrastructure-related topics. Almost all public libraries (98.4 percent) offer wireless internet (Wi-Fi) to patrons, consistent across all locales. Library websites are nearly as common. A majority of public libraries (64.7 percent) reported having a fiber optic internet connection, including six in 10 libraries in towns or rural areas. Libraries in cities and suburbs are more likely to have hardware replacement schedules (86.2 percent and 72.1 percent, respectively) than town/rural libraries (49.6 percent).

**Table 6.** Percentage of Public Libraries Reporting Infrastructure-Related Questions, by Locale

Infrastructure-Related Question	City	Suburb	Town/Rural	Overall
Library has a website	100.0%	99.3%	90.5%	93.3%
Library offers wireless internet to patrons	99.0%	98.5%	98.4%	98.4%
Library reports having fiber optic internet connection	83.8%	71.7%	60.6%	64.7%
Library (or entity controlling technology purchasing) has hardware replacement schedule	86.2%	72.1%	49.6%	57.4%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

While the survey asked libraries to report the fastest subscribed download and upload speeds for their internet service at any location within their administrative entity, about 35% of all respondents did not answer this question. Due to the risk of nonresponse bias, estimates of average internet speeds were not calculated. Given that limitation, Table 7 provides a summary of survey responses to the

internet download speed question, which was asked separately for single-outlet and multiple-outlet libraries.

For single-outlet libraries overall, the most common download speed was 100 Mbps—reported by 23.3 percent of libraries that provided an answer. For multiple-outlet libraries overall, the most common subscribed download speed for the fastest outlet was 1,000 Mbps (reported by 24.6 percent of libraries that answered) and the most common download speed for the slowest outlet was 100 Mbps (reported by 22.0 percent of libraries that answered). As of 2015, the Federal Communications Commission defines broadband download speed as 25 Mbps for households. It set a target of 100 Mbps for libraries serving fewer than 50,000 people, and 1,000 Mbps for libraries serving 50,000 or more people as part of the federal E-rate program. Overall, 17.1 percent of single-outlet libraries and 27.3 percent of multiple-outlet libraries reported having at least one library location with a subscribed download speed that does not meet the *household* definition of broadband.

**Table 7.** Summary of Responses to Internet Download Speed, by Administrative Structure and Locale

Locale	Indicator	Single Outlet Libraries	Multiple Outlet Libraries	
		Download Speed	Fastest Download Speed Among Outlets	Slowest Download Speed Among Outlets
City	Number of Respondents to Speed Question	26	70	67
	Most Common Speed Reported	100 Mbps	1,000 Mbps	100 Mbps
	Percent of Respondents Reporting Most Common Speed	19.2%	44.3%	25.4%
	Percent of Respondents Reporting Less than 25 Mbps Download	7.7%	< 5.0%	9.0%
Suburb	Number of Respondents to Speed Question	206	75	72
	Most Common Speed Reported	100 Mbps	1,000 Mbps	100 Mbps
	Percent of Respondents Reporting Most Common Speed	24.8%	26.7%	19.4%
	Percent of Respondents Reporting Less than 25 Mbps Download	9.7%	< 5.0%	23.6%
Town/ Rural	Number of Respondents to Speed Question	507	127	125
	Most Common Speed Reported	100 Mbps	100 Mbps	100 Mbps
	Percent of Respondents Reporting Most Common Speed	22.9%	32.3%	21.6%
	Percent of Respondents Reporting Less than 25 Mbps Download	20.5%	11.0%	39.2%
Overall	Number of Respondents to Speed Question	739	272	264
	Most Common Speed Reported	100 Mbps	1,000 Mbps	100 Mbps
	Percent of Respondents Reporting Most Common Speed	23.3%	24.6%	22.0%
	Percent of Respondents Reporting Less than 25 Mbps Download	17.1%	5.9%	27.3%

Table 8 presents the percentage of public libraries reporting the frequency with which their public internet is sufficient for patron needs. At least eight out of 10 libraries reported that the internet connection speed often met patron needs, for both public computers and wireless internet, and these findings were consistent across locales. Overall, wireless internet was slightly less often sufficient for patron needs than internet via public computers.

**Table 8.** Percentage of Public Libraries Reporting Frequency of Patron Internet Sufficiency, by Internet Connection Type and Locale

Locale	Sufficient Internet on Public Computers			Sufficient Internet on Wireless Internet		
	Rarely	Sometimes	Often	Rarely	Sometimes	Often
City	0.8%	13.3%	85.9%	0.8%	18.7%	80.5%
Suburb	3.4%	7.8%	88.8%	3.5%	14.2%	82.3%
Town/Rural	2.7%	15.3%	82.0%	2.4%	19.6%	78.0%
Overall	2.8%	13.2%	84.0%	2.6%	18.2%	79.2%

Table 9 illustrates the percentage of public libraries that face various challenges to improving broadband connectivity. Overall, about three out of 10 libraries reported that unaffordable costs, lack of faster available service, contract terms, and lack of control were factors affecting the ability to increase speeds. Notably, 43.2 percent of libraries in towns and rural areas reported that the lack of faster service prevented them from increasing internet speed, compared with 15.6 percent of city libraries and 15.3 percent of suburban libraries.

**Table 9.** Percentage of Public Libraries Reporting Factors Affecting Ability to Increase Broadband Connectivity, by Locale

Factor affecting ability to increase broadband connectivity	City	Suburb	Town/Rural	Overall
Library cannot afford the cost of increasing bandwidth to support faster speeds	24.8%	24.9%	38.0%	34.0%
Other entities influence or make decisions regarding the library's bandwidth	29.6%	32.8%	28.2%	29.5%
Library lacks the technical knowledge to increase bandwidth	6.5%	8.0%	18.7%	15.3%
A faster speed is not available in library's service area	15.6%	15.3%	43.2%	34.6%
Library currently locked into contract for a particular speed (including E-rate)	27.2%	27.4%	31.0%	29.9%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 10 enumerates the technology infrastructure components that public libraries added, replaced, or upgraded in the past two years. Overall, the most common component that libraries improved was public access desktop computers, with almost seven out of 10 libraries having added, replaced, or upgraded them in the past two years. Other components that more than half of libraries improved include the internal network hardware (62.3 percent) and security measures (58.2 percent). Less than half (43.7 percent) of public libraries had improved their internet connection speed in the past two years.

**Table 10.** Percentage of Public Libraries that Added, Replaced, or Upgraded Infrastructure Components within Past 2 Years, by Locale

Infrastructure Component	City	Suburb	Town/Rural	Overall
Bandwidth (e.g., improved speeds)	51.4%	51.1%	40.4%	43.7%
Internal network (e.g., cabling, routers, and/or wireless access points)	79.4%	71.0%	57.8%	62.3%
Firewalls or other security measures	78.7%	70.0%	52.5%	58.3%
Any of the above [bandwidth, internal network, or security]	99.6%	97.0%	90.7%	92.8%
Public access computers (desktops)	81.3%	76.9%	66.3%	69.8%
Public access laptops	48.5%	40.8%	28.4%	32.6%
Public-access tablets (e.g., iPads, Galaxy)	34.2%	21.7%	16.3%	18.6%
On-site computer lab	52.1%	26.8%	13.8%	19.2%
Mobile computer lab (e.g., cart that can be transported out of the building, tech-mobile)	32.1%	9.8%	4.9%	7.6%
Cloud-based server management	52.4%	36.9%	24.5%	29.2%
Physical servers	61.3%	49.1%	28.0%	35.1%
Videoconferencing software license or equipment for public or staff (e.g., web cameras, speakers, TV monitors, etc.)	78.7%	59.6%	32.5%	41.9%
Digital signage (e.g., scrolling tickers of information, calendars)	47.1%	32.8%	11.8%	19.1%
Other	4.5%	2.0%	2.4%	2.4%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

## Digital Literacy and Training

Table 11 displays the percentage of public libraries that offer informal or point-of-use training<sup>7</sup>, formal programs or classes<sup>8</sup>, or either of these formats, on various digital literacy-related topics. Overall, at least two out of three public libraries offer informal training on general computer skills, general computer software, and general internet use, and city, suburban, and town or rural libraries tend to offer this training at similar rates. Classes are less common, although 42 percent offer formal training in at least one of the topics.

**Table 11.** Percentage of Public Libraries Offering Digital Literacy-Related Topics, by Training Format and Locale

Digital Literacy-Related Topic	Informal point-of-use training				Formal program/class				Any training/program			
	City	Suburb	Town/Rural	Overall	City	Suburb	Town/Rural	Overall	City	Suburb	Town/Rural	Overall
General computer skills (e.g., how to use a mouse and keyboard)	76.7%	77.2%	74.4%	75.2%	49.2%	32.1%	15.3%	21.4%	91.8%	87.8%	79.5%	82.3%
General computer software (e.g., word processing, presentation)	71.0%	69.3%	65.1%	66.5%	51.1%	39.7%	15.4%	23.5%	93.0%	86.3%	71.1%	76.2%

Digital Literacy-Related Topic	Informal point-of-use training				Formal program/class				Any training/program			
	City	Suburb	Town/Rural	Overall	City	Suburb	Town/Rural	Overall	City	Suburb	Town/Rural	Overall
General internet use (e.g., web searching)	81.0%	76.0%	74.0%	74.9%	41.4%	33.5%	14.2%	20.6%	93.8%	89.7%	79.1%	82.6%
Using online databases (e.g., Gale, Cengage, EBSCO, ProQuest)	73.5%	75.2%	60.5%	65.0%	51.5%	34.1%	13.2%	20.6%	91.1%	89.5%	66.1%	73.4%
Safe online practices (e.g., privacy, Internet safety)	49.6%	48.7%	47.1%	47.6%	38.3%	25.0%	13.6%	17.8%	69.2%	62.9%	55.4%	58.1%
Social media (e.g., blogging, Twitter)	49.1%	46.0%	39.3%	41.5%	34.9%	26.2%	9.8%	15.3%	68.3%	59.7%	44.6%	49.7%
General familiarity with new technology (e.g., digital petting zoo)	43.0%	35.8%	25.9%	29.3%	30.3%	17.5%	9.0%	12.3%	56.8%	46.7%	32.2%	37.2%
Assistive technology use (e.g., screen readers, text-to-voice)	48.7%	29.7%	19.7%	23.8%	9.8%	4.3%	2.9%	3.6%	53.3%	31.9%	21.8%	26.0%
Using video-conferencing technologies (e.g., Adobe Connect, Skype)	38.7%	31.0%	29.8%	30.6%	11.5%	11.2%	4.2%	6.4%	44.6%	38.8%	32.6%	34.8%
Website development	8.7%	6.9%	6.0%	6.4%	16.4%	6.4%	3.5%	4.9%	22.8%	12.6%	9.3%	10.8%
Digital content creation (e.g., Adobe Premiere Pro, GarageBand)	19.5%	8.5%	4.6%	6.4%	23.2%	11.1%	4.1%	6.9%	36.3%	17.1%	8.5%	12.2%
Coding/computer programming	21.9%	15.7%	8.9%	11.3%	55.5%	36.2%	15.1%	22.6%	65.1%	46.0%	22.0%	30.4%
Robotics	17.6%	9.0%	7.2%	8.2%	37.9%	26.2%	10.0%	15.6%	48.3%	31.0%	15.7%	21.4%
3D Printing	25.4%	16.4%	8.0%	11.1%	40.4%	19.7%	8.3%	12.9%	53.3%	29.6%	14.7%	20.6%
Other	2.7%	3.2%	2.0%	2.3%	7.2%	2.3%	1.2%	1.8%	7.2%	4.0%	2.9%	3.5%
Any of the above	94.9%	89.3%	82.2%	84.7%	80.6%	60.9%	32.1%	42.0%	99.2%	94.8%	85.0%	88.3%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

When asked about the greatest challenges that the library faces in providing digital literacy assistance or training, about 80 percent of libraries provided a qualitative response. These responses fell into five main categories: personnel, finances, infrastructure, community characteristics, and COVID-19. Overall, almost 800 libraries described challenges related to staffing, including adequate staffing to start and maintain programs, as well as staff with needed expertise to lead. More than

350 libraries reported a lack of funding to be an obstacle to providing digital literacy training, and more than 200 explained that they did not have the infrastructure (internet service, hardware, or physical space) to support this type of training. More than 300 libraries described characteristics of their communities as a challenge, including lack of technology access or interest and preference for one-on-one help. More than 150 libraries reported that COVID-19 limited how the library could assist with digital literacy: for example, virtual trainings cannot help users who need help to attend a virtual training.

When asked about emerging technologies for which the library is considering developing assistance or training, about 27 percent of libraries provided a qualitative response. Frequent themes included infrastructure improvement needed to support new technologies, video-conferencing services to accommodate social distancing (e.g., tele-health), virtual or augmented reality technology (especially for workforce development), and acquiring new technology for lending (e.g., digital content creation and makerspace equipment).

Table 12 lists the percentage of public libraries that offered formal, technology-enabled programs or services in the 12 months prior to the survey. More than four in five city libraries and more than two in three suburban libraries offered online discussion programs and live-streamed public programs. No other type of technology-enabled program or service was offered by a majority of public libraries in any locale.

**Table 12.** Percentage of Public Libraries Offering Formal Technology-Enabled Programs or Services in Past 12 Months, by Locale

Technology-Enabled Formal Program or Service	City	Suburb	Town/Rural	Overall
Individual telehealth sessions (via private kiosks or videoconferencing in private rooms)	8.1%	4.5%	4.3%	4.5%
Live instructor distance learning (e.g., interactive online classes)	49.3%	40.0%	17.1%	24.7%
Online job training (e.g., videoconference or certification)	28.1%	18.6%	8.1%	11.9%
Online discussion forums (e.g. book discussion or community issues forum)	82.5%	67.8%	30.2%	42.6%
Streaming public programs (e.g. with remote speakers and live audience in the library or speakers and audience both remote)	90.2%	73.5%	36.4%	48.7%
Hackathons or other coding/app development events (e.g., using open data, app program development)	16.7%	6.1%	2.2%	4.0%
Virtual reality experiences (e.g., field trips)	29.7%	19.5%	10.6%	13.9%
Online legal assistance or consultation (e.g., to prepare a will)	14.0%	7.3%	5.2%	6.2%
Other	4.2%	0.6%	2.0%	1.8%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

## Staff Support and Budget for Technology

Table 13 shows the percentage of public libraries that utilize each type of IT support staff (note that libraries could select more than one type). Overall, the most common types of IT support staffing were arranged through a consortium or similar entity (45.9 percent) and contracted IT support (36.4 percent); these types were also the most common among suburban and town or rural libraries. Among city libraries, a majority employ full-time IT staff (65.4 percent) and/or receive IT support via a parent agency (e.g., city or county government; 54.1 percent).

**Table 13.** Percentage of Public Libraries Using Types of IT Support Staff, by Locale

Type of IT support staff	City	Suburb	Town/Rural	Overall
Full-time library IT staff	65.4%	32.5%	11.0%	19.4%
Part-time library IT staff	23.6%	25.8%	15.6%	18.6%
IT support through a consortium, state library system, or other administrative entity	32.1%	55.8%	43.2%	45.9%
Contracted IT support	26.8%	38.6%	36.3%	36.4%
City/county IT support	54.1%	32.1%	15.6%	21.9%
Volunteer IT staff	7.1%	6.5%	20.5%	16.2%
Other	4.0%	6.0%	8.2%	7.4%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 14 illustrates the percentage of public libraries with staff dedicated to various technology-related activities. Overall, a majority of public libraries have dedicated staff for their social media (61.0 percent) and websites (50.4 percent). In addition, more than one-third of public libraries have dedicated staff for technology-related programs.

**Table 14.** Percentage of Public Libraries with Dedicated Staff for Technology-Related Activities, by Locale

Technology-Related Activity with Dedicated Staff	City	Suburb	Town/Rural	Overall
Digital literacy training for patrons	60.5%	40.6%	20.4%	27.7%
Technology programming for patrons (e.g. STEM classes)	59.5%	44.6%	18.8%	27.6%
<i>Either type of patron training</i>	<i>67.5%</i>	<i>53.3%</i>	<i>28.1%</i>	<i>36.7%</i>
Website development and management	74.2%	68.5%	41.8%	50.4%
Social media account management	81.4%	78.2%	53.0%	61.0%
In-house technology training for staff	60.9%	44.3%	20.8%	28.9%
Other	4.9%	2.7%	3.1%	3.1%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 15 enumerates the percentage of public libraries that identified various impediments to offering digital content. By far the most common impediment was the cost or payment terms of a subscription service (77.5 percent), followed by licensing terms or restrictions of the service (44.1 percent).

**Table 15.** Percentage of Public Libraries Reporting Impediments to Offering Desired Digital Content, by Locale

Impediment to Offering Desired Digital Content	City	Suburb	Town/Rural	Overall
Subscription cost or payment terms	89.2%	83.8%	74.2%	77.5%
Broadband limitations within the library	6.2%	10.4%	25.1%	20.3%
Duplication of content across vendors	45.3%	36.0%	20.0%	25.4%
Vendor licensing terms or restrictions (e.g., embargo, non-simultaneous usage, lack of remote use, etc.)	69.8%	57.6%	37.1%	44.1%
Concerns about privacy protections for patron data	44.7%	32.8%	27.9%	30.1%
Inability to obtain local data about patron usage	25.7%	16.9%	20.5%	19.9%
Other	2.0%	1.0%	2.6%	2.1%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 16 lists the percentage of public libraries pursuing different solutions or strategies to offer patrons access to digital content. By far, the most common strategy is purchasing digital content via a consortium (64.9 percent).

**Table 16.** Percentage of Public Libraries Pursuing Solutions or Strategies to Offer Access to Digital Content, by Locale

Solution or Strategy	City	Suburb	Town/Rural	Overall
Consortium purchasing	77.5%	79.5%	58.5%	64.9%
Diversifying the vendors with whom you contract	67.3%	50.0%	22.5%	31.9%
Focusing on local and/or independent digital content	28.4%	18.7%	14.5%	16.3%
Loaning items preloaded with digital content that is not otherwise available (e.g., E-readers, mp3 players, etc.)	27.1%	31.1%	19.6%	23.0%
Other	1.5%	1.7%	1.7%	1.7%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 17 displays the percentage of public libraries that reported a high, medium, or low priority level for internal data and network security. Overall, more than six in 10 public libraries indicated that the security of their networks and data is a high priority.

**Table 17.** Percentage of Public Libraries by Reported Priority Level for Internal Data and Network Security, by Locale

Priority level for internal data and network security	City	Suburb	Town/Rural	Overall
Low	3.3%	3.8%	11.8%	9.3%
Medium	7.6%	24.8%	32.3%	29.0%
High	89.1%	71.4%	55.9%	61.7%

Table 18 provides the percentage of public libraries that have budget lines or funding specifically for technology, and of those that do, the percentage that have full, some, or no control over that technology budget. Overall, three out of five public libraries have specific technology budgets.

**Table 18.** Percentage of Public Libraries with Specific Budgets for Technology Expenditures and Level of Control over Technology Budget, by Locale

Specific Technology Budget and Level of Control	City	Suburb	Town/Rural	Overall
Library has a budget line item(s) or funding designated specifically for public access technology	80.3%	67.3%	55.5%	59.9%
Library leadership has <b>FULL</b> control over the decision making of those technology expenditures	47.4%	46.7%	34.3%	38.2%
Library leadership has <b>SOME</b> control over the decision making of those technology expenditures	32.9%	20.1%	20.0%	20.7%
Library leadership has <b>NO</b> control over the decision making of those technology expenditures	0.0%	0.3%	1.0%	0.8%

NOTE: Detail percentages in each column may not sum to the overall estimate due to rounding.

Table 19 shows the percentage of public libraries that use various revenue sources **outside** the operating budget to pay for technology. Overall, more than half of public libraries use grants (57.9 percent) and donations (52.9 percent) to pay for technology; these sources were the most frequent across locale groups.

**Table 19.** Percentage of Public Libraries Using Revenue Sources Outside Operating Budget for Technology Expenditures, by Locale

Revenue Source	City	Suburb	Town/Rural	Overall
Library Services and Technology Act (LSTA) funds	44.9%	28.0%	25.4%	27.1%
Federal E-Rate	62.6%	37.8%	37.7%	39.0%
State universal service funds	23.8%	13.9%	14.1%	14.6%
City/county funds	65.6%	45.4%	42.1%	44.1%
Grants	83.7%	59.3%	55.4%	57.9%
Donations or fundraisers	68.4%	51.5%	52.3%	52.9%
Other	4.0%	3.1%	3.4%	3.4%

NOTE: Percentages in each column will not sum to 100 because respondents could select more than one option.

Table 20 illustrates the percentage of public libraries that applied for E-Rate funding in FY 2019, including whether they applied individually or as part of a consortium and for which category of funding they applied (Category 1 for internet service and Category 2 for network infrastructure). It also provides the percentage of public libraries that reported various reasons for not applying for E-Rate in FY 2019. Of those that applied for E-Rate, more than two-thirds of city libraries applied individually, whereas almost two-thirds of suburban libraries applied as part of a consortium. Overall, half of public

libraries applied for E-Rate in FY 2019. Among the reasons for not applying to E-Rate in FY 2019, the most frequent reason for city libraries was that it was not necessary to apply (16.2 percent), while for suburban and town or rural libraries it was that the discount was not worth the time necessary to participate in the program (23.4 percent and 20.2 percent, respectively).

**Table 20.** Percentage of Public Libraries that Applied for E-Rate in FY 2019 by Funding Category and Reasons for Abstaining, by Locale

Questions about Application to E-Rate during FY 2019	City	Suburb	Town/Rural	Overall
<b>Yes, applied for E-Rate</b>	<b>66.7%</b>	<b>53.3%</b>	<b>47.2%</b>	<b>49.9%</b>
Individually	47.1%	18.3%	27.4%	26.1%
As Part of Consortium	19.6%	35.0%	19.9%	23.8%
Applied for Only Category 1 (Internet Service)	31.6%	27.5%	26.4%	26.9%
Applied for Only Category 2 (Infrastructure)	2.4%	6.2%	2.8%	3.6%
Applied for Both Categories	32.2%	17.3%	16.4%	17.5%
<b>No, did not apply for E-Rate</b>	<b>33.3%</b>	<b>46.7%</b>	<b>52.8%</b>	<b>50.1%</b>
Library did not comply with CIPA filtering requirements	8.0%	15.7%	12.6%	13.2%
Discount not worth the time necessary to participate	14.9%	23.4%	20.2%	20.7%
Lack of staff capacity to complete the application	13.7%	16.1%	20.1%	18.7%
Staff did not believe the library system would qualify or felt discouraged from applying due to a previously denied application	1.7%	3.9%	5.4%	4.8%
Library did not find it necessary to apply	16.2%	19.1%	16.9%	17.4%
Other	6.0%	4.3%	9.0%	7.7%

NOTE: All percentages are calculated from total number of libraries in each column.

## Notes

1. In this report, the term public library means an administrative entity (AE), which is an agency that is legally established under local or state law to provide public library service to the population of a local jurisdiction. An AE may be a single-outlet library or a multiple-branch library system.
2. Information about the Digital Inclusion Survey is available at: [www.ala.org/tools/research/digitalinclusion](http://www.ala.org/tools/research/digitalinclusion).
3. Eight regions, as defined by the Bureau of Economic Analysis, excluding outlying areas, were collapsed into five: Northeast, Southeast, Great Lakes, Plains, and West.
4. Nine legal structure types, as defined in the Public Libraries Survey, were collapsed into five: County/Parish or City/County, Municipal, Library District, Non-Profit, and all others (School District, Multijurisdictional, Tribal Government, or Other).
5. The urban-centric locale code system, developed by the U.S. Department of Education's National Center for Education Statistics (NCES), classifies geographic areas into four major locales based on U.S. Census Bureau definitions:
  - City: territory inside an urban area with a population of 50,000 or more and inside a principal city;
  - Suburb: territory inside an urban area with a population of 50,000 or more and outside a principal city;
  - Town: territory inside an urban area with a population of 2,500 or more but less than 50,000; and
  - Rural: territory that does not lie within urbanized areas or urban clusters.

Locale codes were assigned to each library system using two methods: (1) the geographic location of the library system's physical address and (2) the modal locale code among central and branch libraries of that library system (i.e., excluding bookmobile and books-by-mail-only outlets). This report uses the locale code assigned based on the second method: the modal locale code of the library system's associated stationary outlets. Furthermore, it collapses the Town and Rural categories.

6. Specifically, the percentage of the population identifying as persons of color and the percentage of the population with a college degree. Census tract was selected as the geographic area from which to attribute demographics due to the lack of a comprehensive source of legal service area boundaries and the variation in the geographic bases for those legal service areas.
7. One-on-one technology help (e.g., Web browsing, using library databases, etc.) upon patron request, including by appointment. Assistance may or may not be provided by a member of the library staff (e.g., a volunteer).
8. Program or class or with planned, structured content and design offered at a specified time. The program or class may occur in the library or in another facility, and the instructor or program lead may or may not be a member of the library staff.
9. American Association of Public Opinion Research response rate 2. Partial surveys that were at least 75 percent complete were considered complete.

# Appendix A. Sample Design, Survey Methodology, and Weighting Documentation

## Sample Design

The 2020 Public Library Technology Survey collected data from the administrative entity (AE) or “system” level. The AE was used as the sample unit because of the extensive data about each AE available from the Public Libraries Survey (PLS), which were used in the sample design and for post-survey weighting. In contrast, the PLS offers much less data for individual outlets (facilities or locations). The sample frame was based on the FY 2018 [Public Libraries Survey](#) public use AE data file. Demographic variables for the census tract in which the AE is located were merged onto the PLS AE file from the [2020 Census Planning Database, which includes demographics based on the 2014–2018 five-year estimates from the American Community Survey](#). The resulting file was modified by removing records designated as closed, removing records with missing population of the legal service area (POPU\_LSA=-9), and removing records that only operated bookmobiles (that is, did not have a stationary location open to the public), leaving a total of 9,193 libraries eligible to be sampled.

The goal of the survey was to calculate estimates of the survey data at the national level and for 63 peer groups. These peer groups were constructed using region, legal basis (governmental structure), and locale from the PLS data, and the percentage of census tract’s population identifying as persons of color and the percentage of census tract’s population with a college degree from the Census Planning Database. The sample frame was stratified according to these 63 peer groups. The sample was drawn with smaller strata being oversampled to ensure a minimum size of 30 libraries and the largest strata being undersampled to achieve an overall sample size around 2,500 libraries. The final sample used to field the 2020 Public Library Technology Survey contained 2,494 libraries.

## Survey Methodology

The questionnaire for the 2020 Public Library Technology Survey drew extensively from prior versions of the Public Libraries and the Internet survey and the Digital Inclusion Survey. Survey methodologists reviewed the questionnaire and then virtually conducted cognitive interviews with 11 potential respondents in March 2020. Feedback from these interviews informed revisions to the questionnaire. The 2020 Public Library Technology Survey was fielded from October 15, 2020, to December 18, 2020. The questionnaire was entirely Web-based. (See Appendix B for a PDF version of the survey, including a glossary, that the study team distributed to respondents for their reference and use as a worksheet.) Public library directors received invitations and reminders to participate in the survey by email and USPS First Class mail over the course of the field period. A targeted group of libraries received one reminder telephone call near the end of the field period. Directors from sampled libraries were promised a customized report comparing their responses with those from similar libraries, to be distributed after the survey concluded. The final response rate<sup>9</sup> was 62.2 percent. Table A1 shows the

sample sizes and response rates by locale. All but three of the 63 strata achieved at least 50 percent response.

**Table A1.** Number of Sampled and Responding Public Libraries and Response Rates, by Locale

Revenue Source	City	Suburb	Town/Rural	Overall
Number of sampled libraries	172	688	1,631	2,491
Number of respondents	123	425	1,002	1,550
Response rate	71.5%	61.8%	61.4%	62.2%

## Weighting and Nonresponse Bias

This section outlines the procedure used to calculate analytic weights for the 2020 Public Library Technology Survey and explains the effects of the weighting procedure on the precision of estimates and on observable nonresponse bias.

### Weighting Procedure

Final weights were assigned to all 1,550 responding libraries out of the original sample of 2,494 libraries. All other sampled libraries (i.e., nonresponding and ineligible libraries) have a final weight of 0. For a given responding library, the final weight is the product of three factors:

1. A base weight equal to the inverse of the library’s original probability of selection for the sample
2. A nonresponse adjustment factor
3. A poststratification adjustment factor

### HANDLING OF INELIGIBLE LIBRARIES

During data collection, 3 sampled libraries were found to be ineligible for the survey. These consisted of two groups:

- 2 libraries that were assumed to be closed because all contact information appeared to be bad (i.e., emails bounced back and phone numbers were disconnected).
- 1 library that was discovered to be a law library.

These 3 ineligible libraries are referred to as “sample ineligibles” because they are classified as ineligible based solely on information collected during data collection. This implies that there is likely an unknown number of similarly ineligible libraries on the frame—i.e., closed libraries or law libraries that are not identified as such on the frame—making it impossible to calculate control totals that fully exclude these types of ineligible libraries. Accordingly, the 3 sample ineligibles were excluded from the nonresponse adjustment step but included in the poststratification step. Additional detail is provided in the descriptions of steps 2 and 3, below.

## STEP 1: BASE WEIGHT

For each sampled library  $l$ , the base weight was the inverse of the probability of selection for the sample:

$$(1) b_{l,h} = \frac{N_h}{n_h}$$

where  $N_h$  is the number of libraries on the frame and  $n_h$  is the number of originally sampled libraries, both within library  $l$ 's stratum  $h$ . Note that in this formula,  $N_h$  and  $n_h$  include the ineligible libraries, such that the base weight is the inverse of each library's original probability of selection.

## STEP 2: NONRESPONSE ADJUSTMENT

The 2,491 eligible sampled libraries (excluding the 3 sample ineligibles) were then grouped into a set of nonresponse adjustment cells, which were defined by various combinations of Public Libraries Survey (PLS) and tract-level American Community Survey (ACS) variables available for both responding and nonresponding libraries.

The nonresponse adjustment cells were identified using a classification and regression tree (CART) algorithm with response status (1 = respondent, 0 = eligible nonrespondent) as the dependent variable and all candidate PLS and ACS variables as the predictors. CART automatically chooses a subset of the available predictors that best predicts response, and then uses the selected predictors to form nonresponse adjustment cells with the goal of maximizing between-cell variability in the response rate. This allows the weights to correct for the observable characteristics that most strongly determine a library's probability of response, thus helping to correct for nonresponse bias.

The characteristics selected to define the nonresponse adjustment cells were:

### PLS variables

- EBOOK — Number of electronic books in library collection
- BKVOL — Number of print materials in library collection
- OBEREG — Region Code from the Bureau of Economic Analysis (BEA)
- AUDIO\_DL — Number of downloadable audio units in library collection
- ELCONT — Total annual count of the circulation of electronic materials and the successful retrieval of electronic information
- KIDCIRCL — Total annual circulation of children's materials
- KIDPRO — Total annual number of children's programs
- LIBRARIA — Number of librarians on staff

### Tract-level ACS variables

- Percent White
- Percent Hispanic
- Percent Black

For library  $l$  assigned to nonresponse adjustment cell  $c$ , the nonresponse adjustment factor was calculated as:

$$(2) f_{l,c} = \frac{r_c + s_c}{r_c}$$

where  $r_c$  is the number of responding libraries and  $s_c$  is the number of eligible nonresponding libraries, both within cell  $c$ .

The nonresponse-adjusted weight was then calculated as:

$$(3) g_l = \begin{cases} b_l * f_l, & \text{if } l \text{ is a respondent} \\ 0, & \text{if } l \text{ is a nonrespondent or ineligible} \end{cases}$$

### STEP 3: POSTSTRATIFICATION ADJUSTMENT

Poststratification adjusts the weights such that they sum to known population totals (control totals) within domains of interest. For the PLA technology survey, control totals were calculated at the stratum level to force the weights to sum to the total number of eligible libraries within each of the 63 sampling strata. This provides a further correction for nonresponse within strata and provides face validity to within-stratum estimates.

The control totals ( $N_h$ ) are the original number of libraries on the frame for each stratum  $h$  and did not exclude the sample ineligible (the 3 sampled libraries determined during data collection to be closed or law libraries). This is because, while the number of such libraries **in the sample** is known, the total number **on the frame** is not known.

Every library  $l$  was assigned an input weight for the poststratification adjustment as follows:

$$(4) k_l = \begin{cases} g_l, & \text{if } l \text{ is a respondent} \\ b_l, & \text{if } l \text{ is a sample ineligible} \\ 0, & \text{if } l \text{ is a nonrespondent or frame ineligible} \end{cases}$$

The poststratification adjustment factor for each stratum  $h$  was then calculated as:

$$(5) m_h = \frac{N_h}{\sum_{l \in h} k_l}$$

That is, the poststratification adjustment factor was equal to the stratum control total, divided by the sum of the nonresponse-adjusted weights for respondents in the stratum plus the sum of the base weights for sample ineligibles in the stratum. The base-weighted sample ineligibles are included in the denominator because they are implicitly included in the control total.

The final weight for each library  $l$  in stratum  $h$  was then calculated as:

$$(6) w_{l,h} = \begin{cases} g_l * m_{l,h}, & \text{if } l \text{ is a respondent} \\ 0, & \text{if } l \text{ is a nonrespondent or ineligible} \end{cases}$$

Therefore, the sum of the final weight across all responding libraries in a given stratum provides an estimate of the total number of eligible libraries in the stratum. For strata without any sample ineligibles, this sum is equal to the control total (i.e., the number of libraries on the frame). For strata with one or more sample ineligibles, this sum is slightly smaller than the control total, with the difference between the sum and the control total representing the estimated number of sample ineligibles in the stratum.

## Precision of Estimates

The effect of weighting on the precision of estimates is captured by the **design effect**. The design effect is the factor by which a complex sampling and weighting procedure inflates the variance of a survey estimate, relative to the variance that would be obtained from a simple random sample of the same size. For many surveys, design effects of 2 or more are common.

In reality, the design effect varies between estimates. However, an approximation of the average design effect is given by the **unequal weighting effect** (UWE). The UWE assumes that estimates are uncorrelated with the weighting variables and is therefore a conservative approximation. Estimates that are in fact correlated with the weighting variables will tend to have a lower design effect than the UWE.

The final analytic weights calculated for the PLA survey have an UWE of approximately 1.16. This implies that the combined effect of (1) variations in sampling rates across strata, (2) the nonresponse adjustment, and (3) the poststratification adjustment is to inflate the variances of PLA survey estimates by 16 percent on average. In general, this would be considered a small design effect.

## Nonresponse Bias

Nonresponse bias occurs when nonresponse is nonrandom; that is, when responding units differ systematically from nonresponding units with respect to any characteristic of interest. Formally, nonresponse bias in an estimate is defined as the difference in the estimate produced using only responding libraries and the estimate produced using all eligible libraries on the frame. For variables collected only on the PLA survey, nonresponse bias is unobservable, because the estimate is known only among respondents.

However, because the PLA sample was drawn from the PLS universe, a rich set of information is observable for all libraries on the frame. This includes variables collected by the PLS as well as tract-level ACS estimates linked to the PLS.

Nonresponse bias can be estimated for any variable observable over the full frame. While this does not directly measure bias in estimates produced from PLA-only variables, it provides an indication of

the risk of nonresponse bias by illustrating the extent to which certain types of libraries are over- and underrepresented among respondents, relative to their representation in the population.

Results from a nonresponse bias analysis (NRBA) of the PLA survey show that the PLA survey was subject to some nonresponse bias, but that the nonresponse and poststratification adjustments were highly effective at reducing this bias. Among the continuous variables, the weighting adjustments reduced the average relative bias from 16.1 percent to 10.5 percent, and the median relative bias from 12.6 percent to 4.2 percent; and, though 12 estimated means showed statistically significant bias prior to adjustment, only 1 showed statistically significant bias after adjustments were applied. Similarly, among the categorical variables, the weighting adjustments reduced the average relative bias from 8.2 percent to 3.4 percent, and the median relative bias from 2.8 percent to 0.9 percent; and, though 11 estimated percentages showed statistically significant bias prior to adjustment, only 1 showed statistically significant bias after adjustments were applied.

Notably, although measures of library size were not used to define the strata, library size is not a substantial contributor to nonresponse bias. The mean size of the legal service area population (POPU\_LSA) showed relative bias of approximately 9 percent prior to adjustment but only 0.4 percent after adjustment, neither of which was statistically significant. Similar patterns were observed for total operating expenses (TOTOPEXP), an alternative measure of size. This implies that responding libraries were not significantly larger or smaller, on average, than nonresponding libraries.

# Appendix B. Invitation Letter and Reference Copy of 2020 Public Library Technology Survey

## Survey Invitation Letter

October 12, 2020

Dear {Director Name} or current library director,

Actionable data is essential for library leaders, and the Public Library Association (PLA) is committed to gathering and using data to document and advocate for the impact of modern public libraries. We invite you to join us in a study of the roles public libraries play in building digitally inclusive communities.

PLA, a division of the American Library Association (ALA), is collaborating with the American Institutes for Research (AIR) to conduct a survey to better understand the current and emerging technology in public libraries across the nation. The **2020 Public Library Technology Survey** gathers information about the public access technology infrastructure, technology-related programming, and technology-related funding streams at your library.

Your participation in this research is what makes the results powerful and actionable. Your input will enable PLA and ALA to provide nationally representative data to engage and inform elected officials, the media, and funders about public library digital inclusion efforts. PLA also will share aggregate results widely with the field, develop tools for peer comparison, and plan relevant professional development opportunities.

**To access the survey, please go to <https://tinyurl.com/PLA2020survey>, and enter your participant ID: {surveyid}**

**This ID code is unique to {Library Name}; please do not share the URL or ID with others.**

For your convenience, we will also send an email from [PLAsurvey@air.org](mailto:PLAsurvey@air.org) to the email address we have for you ({DirectorEmail}) on October 15, 2020 with a direct link to access the 2020 Public Library Technology Survey. (If this is not the best email address to contact you, please send an email to [PLAsurvey@air.org](mailto:PLAsurvey@air.org) with your preferred email address.)

If you have any questions regarding the survey, please feel free to email the research team at [PLAsurvey@air.org](mailto:PLAsurvey@air.org) or call toll-free 1-866-261-2295, option 6.

**Please complete the survey by October 30, 2020.**

Thank you in advance for joining this important work. We believe it directly benefits our nation's public libraries in important ways, and we look forward to sharing the results of the survey next year.

Sincerely,

*Larra Clark*  
Deputy Director, Policy  
Public Library Association  
[www.ala.org/pla](http://www.ala.org/pla)

*Evan Nielsen*  
Senior Researcher  
American Institutes for Research  
[www.air.org](http://www.air.org)



## Reference Copy of 2020 Public Library Technology Survey



### 2020 Public Library Technology Survey

#### Introduction

The Public Library Association (PLA), a division of the American Library Association (ALA), is collaborating with the American Institutes for Research (AIR) to conduct a survey to better understand current and emerging technology in public libraries across the nation. The 2020 Public Library Technology Survey gathers information about the public access technology infrastructure, technology-related programming, and technology-related funding streams at library location(s) within your library system. If technology was available before COVID-19 and is again available or planned to be available in the future, please include as available when answering the questions. PLA will use results from the survey to advocate on behalf of public libraries at the national level. In addition, PLA will publish a summary of aggregate results on its website to share the results widely.

Your input will help to ensure that findings from the survey reflect the unique characteristics of the library locations within your library system as well as similar library systems across the country. **Note that “location” refers to a building that is open to the public (or was open to the public prior to COVID-19) and provides services to the community (e.g., lends books, offers public access to the Internet and computers, other).** In addition, your response will enable us to provide nationally representative data to inform elected officials, the media, and funders about public library digital inclusion efforts.

The survey does not request your name, and your survey responses will remain private. In addition, findings from the survey will be analyzed and reported in aggregate across all public libraries and/or in groups of similar libraries. Peer group data will be incorporated into a data collection tool, coming fall 2021. To read ALA’s privacy policy, please visit <http://www.ala.org/privacypolicy>.

It should take about 25 minutes to complete this survey and you do not need to complete the survey in one session. Rather, you may save your responses and return to the survey at another time. A glossary of terms is available from every question. AIR distributed a PDF version of the survey (this document) for reference. If you have any questions about the survey, please contact the project team at [PLASurvey@air.org](mailto:PLASurvey@air.org) or 866-261-2295, option 6.

## Section 1. Background

The questions in this survey ask about your **library system** (i.e., all stationary locations within your system) unless otherwise specified. Note that “location” refers to a building that is open to the public (or was open to the public prior to COVID-19) and provides services to the community (e.g., lends books, offers public access to the Internet and computers, other). Do not consider bookmobiles or other mobile services unless noted in the question. We recognize that the number of locations within a library system varies; some library systems may have 1 location, while others may have more than 80.

1. Please report the number of stationary locations within your library system. Exclude bookmobiles.

\_\_\_\_\_

**Note:** If you are using this written survey format to prepare your responses for the web-based survey, please be aware that the questions shown to you in *the web-based format* of this survey do not have number labels and will vary depending on your former answer choices.

## Section 2. Public Access Technology

The questions in this section ask about the availability of public access technology within your library system.

2. Does your library system offer the following technologies for **on-site** use by patrons in any location? *Select one response per row.*

	Yes (at least 1 location)	No
Color printer(s)	<input type="checkbox"/>	<input type="checkbox"/>
Large-format printer(s)	<input type="checkbox"/>	<input type="checkbox"/>
3D printer(s)	<input type="checkbox"/>	<input type="checkbox"/>
Wireless printing	<input type="checkbox"/>	<input type="checkbox"/>
Copy machine(s)	<input type="checkbox"/>	<input type="checkbox"/>
Fax machine(s)	<input type="checkbox"/>	<input type="checkbox"/>
Scanner(s)	<input type="checkbox"/>	<input type="checkbox"/>
Laptop(s)	<input type="checkbox"/>	<input type="checkbox"/>
Tablet(s)	<input type="checkbox"/>	<input type="checkbox"/>
E-readers	<input type="checkbox"/>	<input type="checkbox"/>
Early learning devices (e.g., AWE station)	<input type="checkbox"/>	<input type="checkbox"/>
Digital media production lab (e.g., lab with hardware/software for creating videos, scanning content, editing digital photos, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Recreational video gaming consoles (e.g., PlayStation, Xbox)	<input type="checkbox"/>	<input type="checkbox"/>
Smart objects (e.g., LittleBits, Arduino)	<input type="checkbox"/>	<input type="checkbox"/>
Virtual reality headsets (e.g., Oculus)	<input type="checkbox"/>	<input type="checkbox"/>
Assistive technology (e.g., screen readers)	<input type="checkbox"/>	<input type="checkbox"/>
Smartboards	<input type="checkbox"/>	<input type="checkbox"/>
Other, Please Specify:		

3. Does your library system circulate the following technologies for **off-site** use by patrons in any location? *Select one response per row.*

	Yes (at least 1 location)	No
Internet hotspots	<input type="checkbox"/>	<input type="checkbox"/>
Laptops	<input type="checkbox"/>	<input type="checkbox"/>
Tablets	<input type="checkbox"/>	<input type="checkbox"/>
E-Readers	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

4. Does your library system make available the following technology-enabled services or resources for use by patrons? Please consider both subscription and resources curated by your library system (e.g., links to free health resources on a webpage).

	Yes (at least 1 location)	No
E-books/E-audio books (e.g., Overdrive)	<input type="checkbox"/>	<input type="checkbox"/>
Streaming and other downloadable media (e.g., Kanopy, Hoopla, Zinio, Freegal)	<input type="checkbox"/>	<input type="checkbox"/>
Online homework assistance (e.g., Brainfuse, tutor.com)	<input type="checkbox"/>	<input type="checkbox"/>
Online job/employment resources (e.g. Learning Express)	<input type="checkbox"/>	<input type="checkbox"/>
Online language learning (e.g. Mango)	<input type="checkbox"/>	<input type="checkbox"/>
Online health resources (e.g. Medline Plus, Health.gov)	<input type="checkbox"/>	<input type="checkbox"/>
Videoconferencing software (e.g., Adobe Connect, GoToMeeting, Zoom, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Design software (e.g., Adobe InDesign, Photoshop)	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

5. Does your library system offer the following mobile-enabled technologies?

	Yes (at least 1 location)	No
Mobile-optimized website	<input type="checkbox"/>	<input type="checkbox"/>
Mobile apps to access library services	<input type="checkbox"/>	<input type="checkbox"/>
QR codes	<input type="checkbox"/>	<input type="checkbox"/>
Mobile-enabled printing services	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

6. Does your library system conduct technology-based mobile outreach (e.g., via a mobile laptop lab or tech-mobile) in the community?

- Yes, from at least one location
- No

### Section 3. Infrastructure

The questions in this section may require pulling information from other sources or requesting information from IT departments/staff.

7. Please report the total number of internet computers (desktop and laptop) used by the general public across **all library locations** within your library system during fiscal year (FY) 2019. *This should be the same number that you reported on your FY 2019 annual state survey.* Include library-provided laptops and multi-purpose computers that allow access to the Internet. Exclude staff access computers/laptops and those that only access the library system's Public Access Catalogs.

Number of internet computers: \_\_\_\_\_

8. Does your library system have a website?

- Yes, **continue to question 9**  
 No, **skip question 9**

9. Please report the total number of visits to your library system's website during FY 2019. *Report the same number that you reported on your FY 2019 annual state survey.* Skip this question if you answered no to the question above. [These questions will not appear on the web-based survey if you selected "no" on the previous question.]

a. Number of website visits: \_\_\_\_\_

- b. What method(s) do you use to calculate website visits (e.g., website counter)?

- c. What factors, if any, make it difficult to count website visits? *Enter N/A if no difficulties.*

10. Does your library system offer wireless (WiFi) internet access to patrons (e.g., for use with patron laptops, tablets, or other wireless devices)?

- Yes, **continue to question 11**  
 No, **skip question 11**

11. Please report the total number of wireless internet sessions provided by your library system during FY 2019. *Report the same number that you reported on your FY 2019 annual state survey.*

a. Total annual wireless sessions: \_\_\_\_\_

- b. What method(s) do you use to count wireless internet sessions?

- c. What factors, if any, make it difficult to count wireless internet sessions?

12. Is your library system’s public access Internet connection fiber optic?

- Yes, in at least one location
- No

13. Please fill in chart 1 or 2 according to the number of outlets (branches) in your library system to answer this question. For example, if you responded “1” to question 1 of this survey, then your library system is a single outlet system, and any number response greater than “1” given for question 1 means you are responding on behalf of a multiple outlet system.

**1. FOR SINGLE OUTLET LIBRARY SYSTEMS**

What are the **DOWNLOAD** and **UPLOAD** speeds your library system subscribes to for the public access Internet connection? **Please refer to the contract with your Internet Service Provider to answer this question. (NOTE: We are not asking you to conduct a speed test.)**

Subscribed <b>DOWNLOAD</b> speed	_____ Mbps/Gbps
Subscribed <b>UPLOAD</b> speed	_____ Mbps/Gbps

**2. FOR MULTIPLE OUTLET LIBRARY SYSTEMS**

What are the subscribed **DOWNLOAD** and **UPLOAD** speeds your library system subscribes to for the public access Internet connection? **Please refer to the contract with your Internet Service Provider to answer this question. (NOTE: We are not asking for a speed test.)**

*Report the fastest and slowest subscribed speeds at any location within your library system. If all locations have the same speed, please enter that number twice.*

DOWNLOAD SPEED(S)	
Fastest subscribed <b>DOWNLOAD</b> speed in any location	_____ Mbps/Gbps
Slowest subscribed <b>DOWNLOAD</b> speed in any location	_____ Mbps/Gbps
UPLOAD SPEED(S)	
Fastest subscribed <b>UPLOAD</b> speed in any location	_____ Mbps/Gbps
Slowest subscribed <b>UPLOAD</b> speed in any location	_____ Mbps/Gbps

14. How often does your library system’s public internet connection speed meet patron needs?

	<b>Rarely</b> (e.g., Web pages consistently delayed in loading)	<b>Sometimes</b> (e.g., Web pages delay in loading at different times of the day)	<b>Often</b> (e.g., patrons consistently can access the content they want when they want it)
Internet connection on public computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WiFi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- a. Please share any specific comments you have about the adequacy of your library system’s current Internet connection speeds.

15. Do any of the following factors affect your library system’s ability to increase its broadband connectivity?

	Yes (at least 1 location)	No
The library system cannot afford the cost of increasing bandwidth to support faster speeds	<input type="checkbox"/>	<input type="checkbox"/>
City/county/other entities influence or make decisions regarding the library system’s bandwidth	<input type="checkbox"/>	<input type="checkbox"/>
The library system lacks the technical knowledge to increase bandwidth	<input type="checkbox"/>	<input type="checkbox"/>
A faster speed is not available in our service area	<input type="checkbox"/>	<input type="checkbox"/>
The library system is currently locked into contract for a particular speed, including E-rate	<input type="checkbox"/>	<input type="checkbox"/>

16. Does your library system or the entity that controls technology purchasing have a hardware replacement schedule?

- Yes
- No

17. Within the past 2 years, were the following components of your library system’s technology infrastructure **added, replaced, or upgraded**? Select one response per row.

	Yes (at least 1 location)	No
Public access computers (desktops)	<input type="checkbox"/>	<input type="checkbox"/>
Public access laptops	<input type="checkbox"/>	<input type="checkbox"/>
Public-access tablets (e.g., iPads, Galaxy)	<input type="checkbox"/>	<input type="checkbox"/>
On-site computer lab	<input type="checkbox"/>	<input type="checkbox"/>
Mobile computer lab (e.g., cart that can be transported out of the building, tech-mobile)	<input type="checkbox"/>	<input type="checkbox"/>
Bandwidth (e.g., improved speeds)	<input type="checkbox"/>	<input type="checkbox"/>
Internal network (e.g., cabling, routers, and/or wireless access points)	<input type="checkbox"/>	<input type="checkbox"/>
Firewalls or other security measures	<input type="checkbox"/>	<input type="checkbox"/>
Cloud-based server management	<input type="checkbox"/>	<input type="checkbox"/>
Physical servers	<input type="checkbox"/>	<input type="checkbox"/>
Videoconferencing software license or equipment for public or staff (e.g., web cameras, speakers, TV monitors, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Digital signage (e.g., scrolling tickers of information, calendars)	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

#### Section 4. Digital Literacy and Training

18. Does your library system offer programming or training to patrons on the following digital literacy-related topics, whether in-person or online, or in the library or off-site?  
If programs/training were offered before COVID-19 and is again available or planned to be available in the future, please include as available when answering this question.

	Yes, Informal Point-of-use Training (at least 1 location)	Yes, Formal Program/Class (at least 1 location)	No
General computer skills (e.g., how to use a mouse and keyboard)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General computer software (e.g., word processing, presentation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General internet use (e.g., web searching)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using online databases (e.g., Gale, Cengage, EBSCO, ProQuest)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safe online practices (e.g., privacy, Internet safety)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social media (e.g., blogging, Twitter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General familiarity with new technology (e.g., digital petting zoo)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assistive technology use (e.g., screen readers, text-to-voice)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using videoconferencing technologies (e.g., Adobe Connect, Skype)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Website development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Digital content creation (e.g., Adobe Premiere Pro, GarageBand)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coding/computer programming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Robotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3D Printing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>			

19. In the past 12 months, did your library system **formally offer** any of the following technology-enabled programs or services, either alone or in partnership with another organization either on or off-site? *Select one response per row.*

	Yes (at least 1 location)	No
Individual telehealth sessions (via private kiosks or videoconferencing in private rooms)	<input type="checkbox"/>	<input type="checkbox"/>
Live instructor distance learning (e.g., interactive online classes)	<input type="checkbox"/>	<input type="checkbox"/>
Online job training (e.g., videoconference or certification)	<input type="checkbox"/>	<input type="checkbox"/>
Online discussion forums (e.g. book discussion or community issues forum)	<input type="checkbox"/>	<input type="checkbox"/>
Streaming public programs (e.g. with remote speaker[s] and live audience in the library or speakers and audience both remote)	<input type="checkbox"/>	<input type="checkbox"/>
Hackathons or other coding/app development events (e.g., using open data, app program development)	<input type="checkbox"/>	<input type="checkbox"/>
Virtual reality experiences (e.g., field trips)	<input type="checkbox"/>	<input type="checkbox"/>
Online legal assistance or consultation (e.g., to prepare a will)	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

20. For what new or emerging technologies is your library system developing or considering developing digital literacy assistance or training in the coming year? Examples may include, but are not limited to, telehealth applications, virtual reality job training, and using open data.

21. What are the greatest challenges your library system faces in providing digital literacy assistance or training?

## Section 5. Staff Support and Budget for Technology

22. What type(s) of IT support staff are utilized by your library system?

	Yes (at least 1 location)	No
Full-time library IT staff	<input type="checkbox"/>	<input type="checkbox"/>
Part-time library IT staff	<input type="checkbox"/>	<input type="checkbox"/>
IT support through a consortium, state library system, or other administrative entity	<input type="checkbox"/>	<input type="checkbox"/>
Contracted IT support	<input type="checkbox"/>	<input type="checkbox"/>
City/county IT support	<input type="checkbox"/>	<input type="checkbox"/>
Volunteer IT staff	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

23. Does your library system have staff dedicated to any of the following technology-related activities?

	Yes (at least 1 location)	No
Website development and management	<input type="checkbox"/>	<input type="checkbox"/>
Social media account management	<input type="checkbox"/>	<input type="checkbox"/>
Digital literacy training for patrons	<input type="checkbox"/>	<input type="checkbox"/>
Technology programming for patrons (e.g. STEM classes)	<input type="checkbox"/>	<input type="checkbox"/>
In-house technology training for staff	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

24. Please take a moment to think about how you select digital content subscriptions for your library system. Have any of the following impeded your ability to offer the digital content that you would like to provide?

	Yes (at least one location)	No
Subscription cost or payment terms	<input type="checkbox"/>	<input type="checkbox"/>
Broadband limitations within the library system	<input type="checkbox"/>	<input type="checkbox"/>
Duplication of content across vendors	<input type="checkbox"/>	<input type="checkbox"/>
Vendor licensing terms or restrictions (e.g., embargo, non-simultaneous usage, lack of remote use, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Concerns about privacy protections for patron data	<input type="checkbox"/>	<input type="checkbox"/>
Inability to obtain local data about patron usage	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

25. Is your library system pursuing any of the following solutions or strategies to offer patrons access to digital subscriptions or paid online content?

	Yes	No
Consortium purchasing	<input type="checkbox"/>	<input type="checkbox"/>
Diversifying the vendors with whom you contract	<input type="checkbox"/>	<input type="checkbox"/>
Focusing on local and/or independent digital content	<input type="checkbox"/>	<input type="checkbox"/>
Loaning items preloaded with digital content that is not otherwise available (e.g., E-readers, mp3 players, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Other, Please Specify:		

26. How big of a priority are internal data and network security to your library system? For example, the library system's ability to protect its online assets and patron privacy from cyber-attacks.

- Low priority
- Medium priority
- High priority

a. Please provide an explanation for your rating.

27. Does your library system have a budget line item(s) or funding designated specifically for public access technology, such as hardware, programming/training, and online services?

- Yes, **continue to question 27-a.**
- No, **skip to question 28**

a. How much control does your library system leadership have over the decision making of those technology expenditures?

- Full control
- Some control
- No control

28. Outside of the operating budget, does your library system pay for technology needs from any of the following sources?

	Yes	No
Library Services and Technology Act (LSTA) funds	<input type="checkbox"/>	<input type="checkbox"/>
Federal E-Rate	<input type="checkbox"/>	<input type="checkbox"/>
State universal service funds	<input type="checkbox"/>	<input type="checkbox"/>
City/county funds	<input type="checkbox"/>	<input type="checkbox"/>
Grants	<input type="checkbox"/>	<input type="checkbox"/>
Donations or fundraisers	<input type="checkbox"/>	<input type="checkbox"/>
Other, Please Specify:		

29. Did your library system apply for Federal E-Rate program funding during FY 2019?

- Yes, individually *continue to question 30, skip question 31*
- Yes, as part of a consortium *continue to question 30, skip question 31*
- No *skip question 30*

30. For which category of Federal E-Rate program funding did your library system apply?

- Category One (e.g., broadband service)
- Category Two (e.g., internal network, routers)
- Both

31. For what reason(s) did your library system not apply for E-rate funding in FY 2019?

	Yes	No
The library system did not comply with Children’s Internet Protection Act (CIPA) filtering requirements	<input type="checkbox"/>	<input type="checkbox"/>
The total discount was not worth the time needed to participate in the program	<input type="checkbox"/>	<input type="checkbox"/>
Lack of staff capacity to complete the application (e.g., it was too complex or time consuming)	<input type="checkbox"/>	<input type="checkbox"/>
Staff did not believe the library system would qualify or felt discouraged from applying due to a previously denied application	<input type="checkbox"/>	<input type="checkbox"/>
The library system does not find it necessary to apply (e.g., it has sufficient funding for its telecommunications needs)	<input type="checkbox"/>	<input type="checkbox"/>
Other, <i>Please Specify:</i>		

### Section 6. Thank You and Final Thoughts

Thank you for taking the time to complete the 2020 Technology Survey. Please answer the final question below. Once you have completed the survey, click “submit survey.”

Please take a moment to describe any other technology issues or concerns that were not reflected in this survey. In particular, please explain challenges and/or successes with library technology services during the COVID-19 pandemic or trends you are watching for the future.

## Library Technology Survey Glossary of Key Terms

### **3D Printer**

A printer that creates a solid, three-dimensional version of a digital model. These machines allow for rapid prototyping and manufacturing.

### **App**

Abbreviation for “mobile application.” A software application designed to run on mobile devices, such as smart phones and tablet computers. Apps are commonly used for information retrieval, communications, and gaming.

### **Assistive Technology**

Technologies that help people with disabilities adapt to processes or complete tasks that would otherwise be difficult or impossible. Examples include hearing aids, wheelchairs, speech to text reader software, etc.

### **Bandwidth/Connectivity Speed**

The speed or capacity of a data transmission rate, usually measured in bits per second (i.e., Megabits per second [Mbps] or Gigabits per second [Gbps]).

### **Broadband**

A term used to describe high-speed Internet access.

### **Cloud-Based Server Management**

Hosting information or files on remote servers not owned by the library. Examples include Microsoft Azure or Amazon Web Services (AWS).

### **Computer Software**

Programs that run on a computer.

### **Coding/App Development Events**

Similar to **hackathons**; an event or program in which people come together to collaborate on a project that leads to an innovative outcome or product.

### **Digital Literacy**

The ability to identify, locate, evaluate, manage, interpret, integrate, and create information effectively and critically using digital technology, or media that is presented in digital formats.

### **Digital Signage**

An interactive digital sign or display that allows patrons to see or interact with information on a large, mounted touchscreen.

### **E-Books/E-Audiobooks**

Digital documents, licensed or not, which can act as substitutes for print books/periodicals or audiobooks on physical media, and can easily be read or listened to on a personal computer, tablet, or other device.

### **E-Rate**

A program of the Federal Communications Commission’s Universal Service Fund that provides discounts to eligible public libraries and schools on telecommunications services, internet access, and related infrastructure.

**Fiber Optic**

A high-speed data transmission medium that uses pulses of light.

**Formal Program/Class**

Program or class or with planned, structured content and design offered at a specified time. The program or class may occur in the library or in another facility, and the instructor or program lead may or may not be a member of the library staff.

**Gigabits per second (Gbps or Gb/s)**

A unit of measure describing the rate of data transfer equal to 1,000,000,000 bits per second; 125,000,000 bytes per second; 1,000,000 kilobits per second; or 1,000 megabits per second. Download and upload speeds from an Internet Service Provider are usually measured in Gigabits per second or **Megabits per second**.

**Hackathons**

An event that takes place either in-person or remotely in which people—usually computer programmers, developers, and designers—collaborate on an intensive technology-related project.

**Informal Point-of-use Training**

One-on-one technology help (e.g., Web browsing, using library databases, etc.) upon patron request, including by appointment. Assistance may or may not be a member of the library staff (e.g., a volunteer).

**Internet Service Provider (ISP)**

A communications carrier that provides access to the Internet; an entity from whom a customer buys internet service.

**IT (Information Technology) Support Staff**

Staff dedicated to the responsibility of maintaining the information technology services and resources available at the library, and assisting library patrons with using these products. May include staff who are contracted through the city/county, or assigned to the whole library system if the library is part of a multi-location set up.

**Large-format Printer**

A printer with a print width between 17" and 100". It can be used to print banners, posters, or signs.

**Library Location**

A library building that is open to the public and provides services to the community (e.g., lends books, offers public access to the Internet and computers, other). In the case of some public libraries, there is only one location, while others have several facilities, which are sometimes referred to as locations of a **library system**.

**Library System**

A public library with a legal service area that may have one or more library locations. For the purposes of this survey, a library system is an Administrative Entity in the national Public Libraries Survey that is responsible to report to a State Library Administrative Agencies' annual survey.

**Megabits per second (Mbps or Mb/s)**

A unit of measure describing the rate of data transfer equal to 1,000,000 bits per second; 125,000 bytes per second; or 1,000 kilobits per second. Download and upload speeds from an Internet Service Provider are usually measured in Megabits per second or **Gigabits per second**.

**Mobile-Optimized Printing Services**

A service that allows library patrons the ability to print documents directly from mobile devices (either personal or library-owned).

**Mobile-Optimized Website**

A website which is optimized to work on cell phones and other devices with smaller screens, limited connection speeds, or less processing power than typical personal computers.

**Open Data**

An archive or database in which all of the data stored is completely accessible to anyone who wants to download, use, or manipulate it. There are no legal restrictions on re-usage of the data. An example would be a collection of data about a local public transit system, which an independent programmer could then use to develop a public transit navigation cell phone app.

**Partner Organization**

Library partner, or an entity or institution separate and distinct from the library that collaborates with the library on programs, training, or initiatives. May include government agencies, non-profit organizations, or private companies.

**Public Access Computers/ Laptops**

A public access computer or laptop that provides public access to the Internet, including those that provide access to a limited set of Internet-based services such as online databases. This includes circulating laptops, but excludes computers or laptops that only access the library's web-based public access catalogs.

**QR Codes**

Graphical codes that can be read by an imaging device, such as cameras on smart phones or tablets, which represent encoded information. These usually link to website URLs when scanned by a code-reader, such as smart phone applications that read QR codes.

**Recreational Video Gaming Consoles**

Recreational video gaming includes modern consoles like current versions of Microsoft Xbox, Sony Playstation, or Nintendo Switch; retro consoles like Atari, NES/SNES, or Sega Genesis; and personal computers with software like The Sims or World of Warcraft. It does not refer to gambling.

**Scanner**

A peripheral machine that converts physical printed documents, images, or other two-dimensional objects into a digital image that can be viewed on a machine, such as a computer.

**Staff**

Employees or contractors of the library.

**Tablet**

A flat computer that is controlled by a touchscreen with varying degrees of computing functionality. Tablets are differentiated from smart phones by their larger screen size. Common varieties include Apple iPad, Amazon Kindle Fire, Samsung Galaxy Note, and Barnes & Noble Nook.

**Videoconferencing Software/Technologies**

Computer-mediated telecommunications technologies that let people in two or more different locations talk to and see each other on computers or comparable technologies.

**Volunteer**

Unpaid person under the supervision of library staff.

**Wireless (Wi-Fi) Internet Access**

Internet access that does not require a direct connection (e.g., Ethernet) for access. Most typically, wireless access adheres to the IEEE 802.11 standard (typically b, g, n, ac, ax) for interoperability and compatibility.