

The Use and Cost of Public Library Materials: Trends Before the COVID-19 Pandemic

JANUARY 2021

Highlights

Between FY 2014 and FY 2018,

- the percentage of libraries offering electronic collection materials increased from 80 percent to 90 percent;
- median per person spending on physical materials decreased by 6 percent, while median per person spending on electronic materials increased by 31 percent; and
- median cost for physical items circulated increased by 11 percent, while median cost for e-circulation decreased by 26 percent.

In FY 2018, libraries in rural areas and libraries serving smaller populations paid less per electronic circulation than libraries situated in other locales or serving larger populations.

Introduction

In the past decade, public libraries in the United States have made major shifts in the means by which they offer information resources to their communities. Historically, public libraries were physical spaces in communities where books and other print materials were systematically housed. Generally, in order to obtain library materials, people would visit the library. During the past several years, however, libraries have been making an increasing volume of electronic books (e-books) and downloadable audio and video content available. As a result, people have been able to make greater use of these materials outside of the physical library space (Hoffert, 2019).

The shift has been most pronounced for smaller libraries that do not have the physical space to expand their physical collections to the extent that they have been able to expand their collections electronically. The Public Libraries Survey (PLS) captures measures of public library spending on materials, types of collection materials, and use of these materials. With these data, we can document the transition by public libraries from the primacy of physical materials to the emergence of electronic materials.

In response to the COVID-19 ("Coronavirus Disease 2019") pandemic, 74 percent of public libraries that responded to the Public Library Association's March 2020 survey indicated that they were expanding their online checkout services because their physical locations were closed to the public (Public Library Association, 2020). Public libraries reported markedly increased demand for e-books, digital audiobooks, and other much needed resources as library patrons adjusted to the lack of access to physical materials at the beginning of the pandemic (Enis, 2020).

This brief uses PLS data from FY 2014¹ and FY 2018 to explore the trends of public libraries' physical and electronic collections expenditures and circulation, including comparisons among subgroups by locale and population size served.² Because of the rapid acceleration of public demand for electronic materials and circulation, it is important to establish the prior availability and usage of these electronic materials with data from before the COVID-19 pandemic.

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¹ FY 2014 and FY 2018 are the only two cycles with high-quality data that can be used in this analysis. Circulation of Electronic Materials was added to the PLS in FY 2013, and the national item response rate that year was about 75 percent. In FY 2014, the item response rate was 97 percent, and all states had item response rates above 75 percent. Missing data were imputed for this item in FY 2014, and imputed values were included in the analysis. The definition of Circulation of Electronic Materials underwent minor methodological revision in FY 2015, and as a result it was not imputed in FYs 2015–2017.

² The locale code system, developed by the U.S. Department of Education's National Center for Education Statistics (NCES), classifies a territory into four major categories: city, suburb, town, and rural. Population size served is measured using the population of the Legal Service Area (LSA) (i.e., the geographic space that a library serves). Population size served is separated into four categories: Very large (>25,000), Large (10,000–25,000), Medium (2,500–9,999), and Small (<2,500).

The brief answers three sets of research questions:³

1. Does the trend in overall circulation per person hold for both physical and electronic circulation? How do electronic circulation trends differ between locale and population size subgroups?
2. How much has the median library's per person spending on electronic materials changed in the past four years? How does that change compare with per person spending on physical materials?⁴ How do these spending trends

differ between locale and population size subgroups?

3. Do electronic materials enable libraries to provide greater value to their communities than traditional print materials based on cost per item circulated?

To contextualize the locale and population size subgroup comparisons presented in this brief, **Table 1** below shows the total number of libraries and their distribution by subgroups in FY 2018 and FY 2014, which have remained relatively consistent over the four-year period.

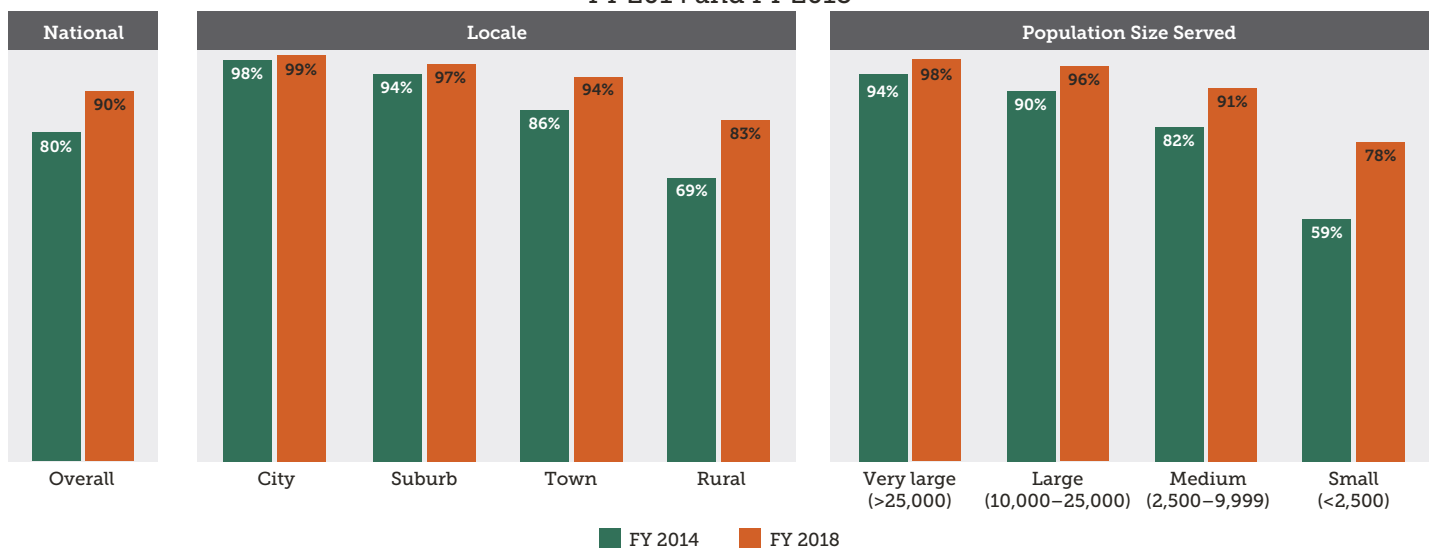
Libraries offer a wide range of collection materials that provide rich information in diverse formats, including physical books, e-books, audio materials, and video materials. The percentage of libraries offering electronic collection materials increased from 80 percent in FY 2014 to 90 percent in FY 2018 (**Figure 1**). The change was larger among rural libraries (14 percent) compared to other locales (between 1 and 8 percent) and was larger for libraries serving small populations (19 percent) compared to other population size groups (between 4 and 9 percent) (**Figure 1**).

Table 1. Public Libraries by Locale and Population Size Served, FY 2018 and FY 2014

	FY 2018		FY 2014*	
	Number	Percent	Number	Percent
Total	9,058	100.0%	9,070	100.0%
Locale				
City	492	5.4%	476	5.2%
Suburb	2,348	25.9%	2,286	25.2%
Town	2,191	24.2%	2,191	24.2%
Rural	4,027	44.5%	4,013	44.2%
Population Groups				
Very large (>25,000)	2,148	23.7%	2,117	23.3%
Large (10,000–25,000)	1,756	19.4%	1,760	19.4%
Medium (2,500–9,999)	2,751	30.4%	2,744	30.3%
Small (<2,500)	2,403	26.5%	2,449	27.0%

* In FY 2014, 104 libraries were not assigned a locale code.

Figure 1. Percentage of Libraries With Electronic Collections by Locale and Population Size Served, FY 2014 and FY 2018



NOTE: Excludes libraries with missing data.

SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

³The analyses focus on the median per capita value of each measure using the population of the LSA for each library system. Data from libraries in U.S. outlying territories are excluded, as are data for libraries not classified as meeting the Federal-State Cooperative System definition of a public library (see the [FY 2018 PLS Data File Documentation](#) for more information). All financial data are in constant FY 2018 dollars.

⁴For consistency with the circulation format categories (physical and electronic), data from Print Materials Expenditures and Other Materials Expenditures were summed to derive a Physical Materials Expenditures category.

Does the trend in overall circulation per person hold for both physical and electronic circulation? How do electronic circulation trends differ between locale and population size subgroups?

The number of libraries offering electronic collection materials increased during the past four years, while the use of these items measured by overall circulation⁵ decreased. Separating circulation for electronic and physical materials illustrates whether declines in overall circulation are the result of decreases in either or both physical and electronic circulation rates.

As spending on and availability of electronic collection materials increased, so did the usage of these materials. Although median circulation of physical materials per person decreased 16 percent nationally from FY 2014 to FY 2018,

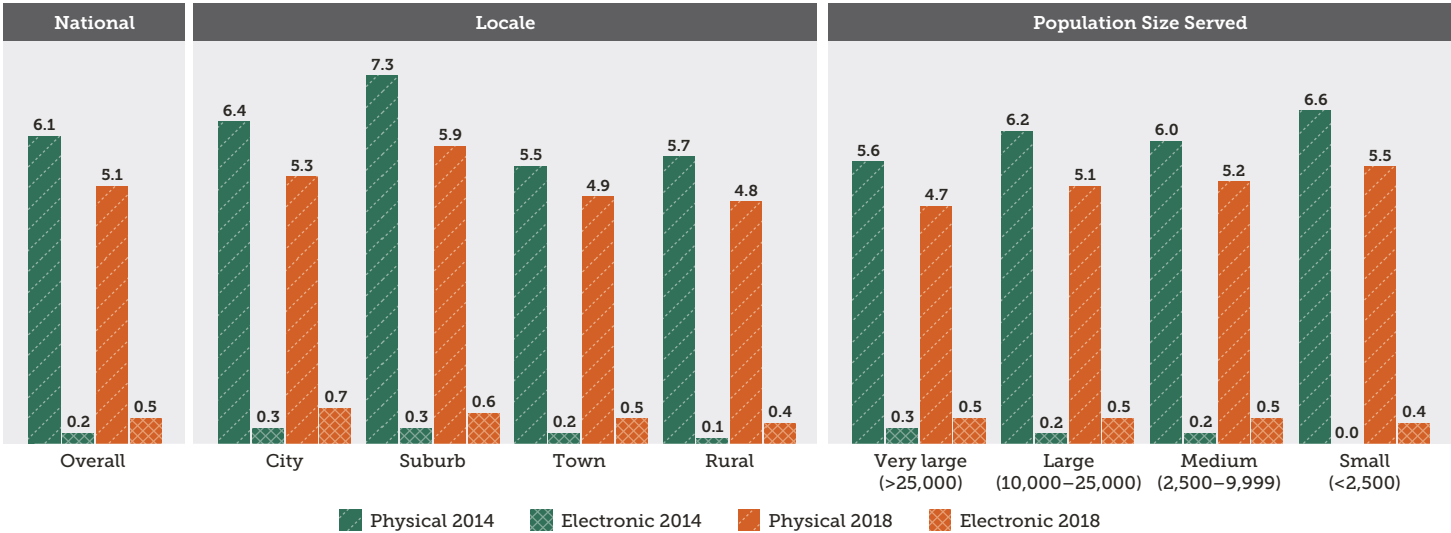
the median circulation of electronic materials per person increased by nearly 150 percent (Figure 2). However, in FY 2018, the median circulation of electronic materials per person was less than one tenth of the median circulation of physical materials per person.

Between FY 2014 and FY 2018, circulation trends were consistent across all locale and population size subgroups (Figure 2). All locale and population size subgroups saw tremendous increases in median circulation of electronic materials per person, ranging from 94 percent for city libraries to 2,287 percent for libraries serving small communities

with populations fewer than 2,500. At the same time, large decreases in median circulation of physical materials per person were pervasive across the subgroups, ranging from 11 percent to 19 percent for libraries in towns and suburbs, respectively (Table A2 in the Appendix).

In FY 2018, the median library serving small communities of fewer than 2,500 circulated more physical collection materials than the median library serving very large communities with populations greater than 25,000, but circulated less electronic materials (Table A2 in the Appendix).

Figure 2. Median Circulation per Person by Material Type, Locale, and Population Size Served, FY 2014 and FY 2018



NOTE: Calculations are based on unrounded estimates; therefore, reported totals may differ because of rounding. Per person estimates use the population of the LSA and exclude libraries with missing data.

SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

⁵“Overall circulation” refers to both physical and electronic circulation.

How much has the median library's per person spending on electronic materials changed in the past four years? How does that change compare with per person spending on physical materials? How do these spending trends differ between locale and population size subgroups?

Public libraries use expenditures to pay for operating expenses, staffing, and collection materials. Collections expenditures are operating expenditures used to pay for print materials, electronic materials, and other materials (e.g. microform). Trends in per person spending on electronic versus physical materials during the past four years serve as indicators for the degree to which libraries are shifting to more digital offerings.

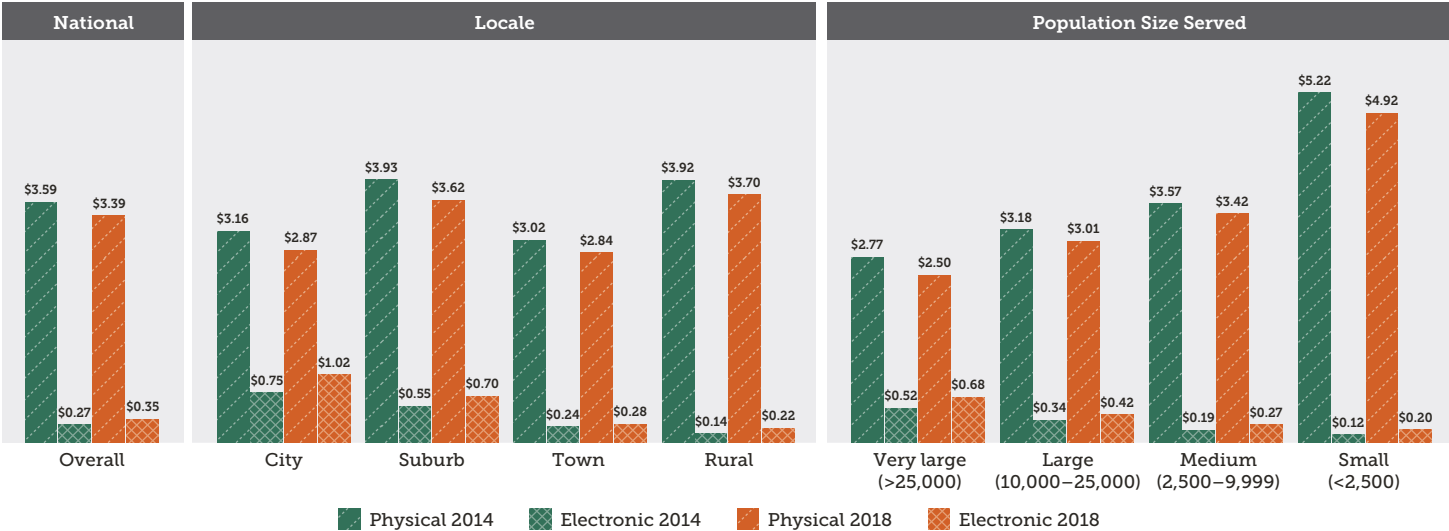
Between FY 2014 and FY 2018, library collections expenditures per person decreased by four percent at the national level (**Table A3** in the

Appendix). During this time, per person spending on physical materials decreased by six percent, while median per person spending on electronic materials increased 31 percent (**Table A3** in the Appendix). Although electronic collections expenditures increased between FY 2014 and FY 2018, in FY 2018, electronic collections made up only a small portion (10 percent) of collections expenditures per person at the national level (**Table A3** in the Appendix).

Between FY 2014 and FY 2018, locale and population size subgroup trends for library collections expenditures

per person were consistent with the national trend (**Figure 3**). Both sets of subgroups increased per person spending on electronic materials. In FY 2018, the median library serving small communities of fewer than 2,500 spent nearly double per person on physical collection materials compared with the median library serving very large communities (populations greater than 25,000). However, libraries in small service areas spent a little over one-third as much on electronic materials per person as the libraries serving very large communities; these patterns were similar in FY 2014 (**Figure 3**).

Figure 3. Median Collections Expenditures per Person by Material Type, Locale, and Population Size Served, FY 2014 and FY 2018



NOTE: All financial data are in constant FY 2018 dollars. Calculations are based on unrounded estimates; therefore, reported totals may differ because of rounding. Per person estimates use the population of the LSA.
 SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

Do electronic materials enable libraries to provide greater value to their communities than traditional print materials based on cost per item circulated?

Public libraries are spending more on electronic materials and less on physical materials per person. Given that overall circulation per person has decreased during the past four years, libraries may differ in terms of the value they offer patrons through item circulation.

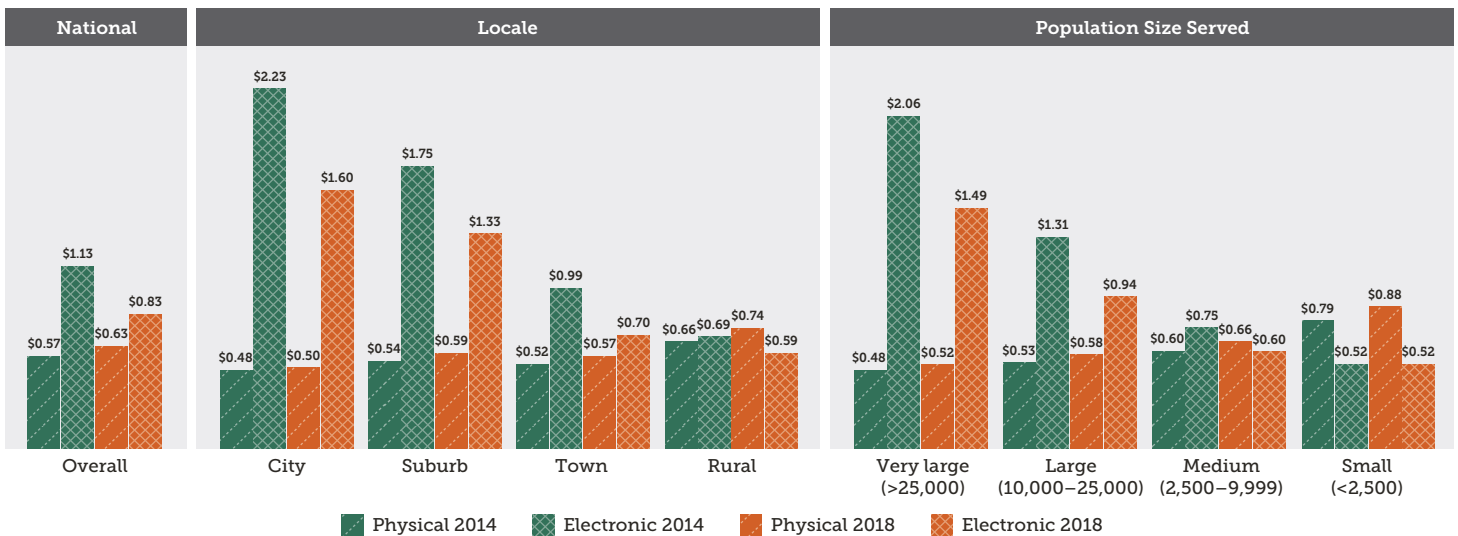
Nationally, the median cost per physical circulation increased 11 percent from FY 2014 (\$0.57) to FY 2018 (\$0.63), while the median cost per electronic circulation decreased 26 percent from \$1.13 to \$0.83 during the same period (Figure 4).⁶ However, there are some differences between how costs for the two materials formats are annualized. Specifically, some physical materials may last for more than the year in which they are purchased, whereas

electronic materials costs must be renewed each year.

Between FY 2014 and FY 2018, costs per circulation trends were consistent across all locale and population size subgroups (Figure 4). There were increased median costs per physical circulation ranging from 6 percent for city libraries to 12 percent for rural libraries. Median costs per electronic circulation decreased less than one percent among libraries serving small communities of fewer than 2,500 and more than 20 percent among libraries serving other communities (Table A4 in the Appendix). In FY 2018, libraries in cities, suburbs, and towns (55 percent of libraries) paid more per electronic item circulation than physical item

circulation (Figure 4). Conversely, libraries in rural areas (44 percent of libraries) paid less per electronic circulation than libraries in other locales and paid less per electronic circulation than per physical circulation. However these libraries paid more per physical circulation than other locales (Figure 4). In FY 2018, libraries serving medium and small populations paid more per physical circulation than other population size groups. They also paid more per physical circulation than per electronic circulation. By contrast, in FY 2018, city libraries and libraries serving very large populations paid about three times as much per electronic circulation as physical circulation, although this difference has decreased since FY 2014 (Table A4 in the Appendix).

Figure 4. Median Collection Expenditures per Circulation by Material Type, Locale, and Population Size Served, FY 2014 and FY 2018



NOTE: All financial data are in constant FY 2018 dollars. Calculations are based on unrounded estimates; therefore, reported totals may differ because of rounding. Per person estimates use the population of the LSA.

SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

⁶Electronic materials expenditures include costs related to databases (i.e., electronic collections), whereas electronic circulation does not include usage of these databases. Also, the electronic materials expenditures data do not reflect variations in pricing structures of electronic materials platforms (i.e., fixed, per-unit, or per-use costs).

Conclusions

Physical visits to the library and physical circulation are certainly mainstays of public library usage metrics. But as electronic materials become more available, public libraries need different metrics to demonstrate how their communities are utilizing these resources. Library use based on physical visits and circulation has been declining during the past decade (IMLS, June 2020); however, the findings presented in this brief suggest that these declines during the past four years may be at least partially offset by the increasing body of resources and materials available electronically. Furthermore, the short-term return on investment for electronic materials, conceptualized here as decreasing costs per electronic circulation, improved substantially from FY 2014 to FY 2018. Nearly 45 percent of all public libraries

in the United States are in rural areas and more than a quarter of all public libraries served a population of fewer than 2,500 people. These are the libraries achieving the lowest costs per electronic circulation.

However, although the vast majority of public libraries in all settings are offering electronic materials to their patrons, there still may be a broadband access gap or an awareness gap that is suppressing even broader use of these resources. In 2016, the Pew Research Center reported that fewer than half of U.S. adults were aware that their public library loaned e-books (Horrigan, 2016). The COVID-19 pandemic may have narrowed this awareness gap for electronic resources (Albanese, 2020); it may also indelibly shift the relationship between the physical library and the community.

Future Research

The findings described in this brief help establish pre-COVID-19 pandemic trends in public library spending on and use of physical and electronic materials. Future research could examine ways in which trends in public library expenditures, patron use, and information access have changed as a result of the pandemic.

Declining physical visits to libraries may indicate fewer people using the library's public computers. Future research could investigate the role and impact of public libraries in enabling members of their communities to access the Internet in places other than library spaces via lending of WiFi hotspots and smart devices (e.g., tablets).

Lastly, future research could examine how direct financial support from SLAAs for libraries to provide electronic materials affect costs per circulation.

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Appendix

Table A1. Percentage of Libraries With Electronic Collection Materials, FY 2018 and FY 2014

Category	Percentage of Libraries With Electronic Materials		Percent Change From FY 2014 to FY 2018
	FY 2018	FY 2014	
Overall	90.1%	80.1%	11.2%
Locale			
City	99.0%	97.7%	1.3%
Suburb	96.8%	94.4%	2.6%
Town	93.7%	85.5%	9.6%
Rural	83.2%	69.1%	20.5%
Population Size Served			
Very large (>25,000)	97.9%	94.3%	2.4%
Large (10,000–25,000)	96.2%	90.2%	5.9%
Medium (2,500–9,999)	90.9%	81.5%	10.2%
Small (<2,500)	77.8%	59.0%	30.1%

SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

Table A2. Median Circulation per Person by Material Type, Locale, and Population Size Served, FY 2018 and FY 2014

Category	FY 2018 Circulation per Person				FY 2014 Circulation per Person				Percent Change from FY 2014 to FY 2018		
	Median Total	Median Physical	Median Electronic	Ratio of Median Electronic to Median Physical	Median Total	Median Physical ¹	Median Electronic	Ratio of Median Electronic to Median Physical	Total	Physical	Electronic
Overall	5.7	5.1	0.5	0.1	6.4	6.1	0.2	0.0	-11.1%	-15.7%	148.4%
Locale											
City	6.1	5.3	0.7	0.1	6.8	6.4	0.3	0.1	-9.6%	-16.8%	94.2%
Suburb	6.6	5.9	0.6	0.1	7.6	7.3	0.3	0.0	-13.3%	-18.8%	126.7%
Town	5.5	4.9	0.5	0.1	5.8	5.5	0.2	0.0	-6.2%	-11.4%	112.2%
Rural	5.4	4.8	0.4	0.1	6.0	5.7	0.1	0.0	-10.0%	-15.3%	261.1%
Population Size Served											
Very large (>25,000)	5.3	4.7	0.5	0.1	6.0	5.6	0.3	0.0	-10.9%	-16.6%	107.0%
Large (10,000–25,000)	5.7	5.1	0.5	0.1	6.6	6.2	0.2	0.0	-12.5%	-17.8%	109.9%
Medium (2,500–9,999)	5.7	5.2	0.5	0.1	6.3	6.0	0.2	0.0	-10.1%	-14.0%	135.4%
Small (<2,500)	6.0	5.5	0.4	0.1	6.8	6.6	0.0	0.0	-11.9%	-16.3%	2,286.8%

¹ FY 2014 Physical Materials Circulation is derived by subtracting Electronic Materials Circulation from Total Circulation. FY 2018 Physical Materials Circulation is a reported variable.

NOTE: Median totals do not equal sum of median detail. Calculations are based on unrounded estimates; therefore, reported totals may differ because of rounding. Per person estimates in the table use the population of the legal service area and exclude libraries with missing data.

SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

Table A3. Median Collections Expenditures per Person by Material Type, Locale, and Population Size Served, FY 2018 and FY 2014

Category	FY 2018 Collections Expenditures				FY 2014 Collections Expenditures				Percent Change from FY 2014 to FY 2018		
	Median Total	Median Physical ¹	Median Electronic	Ratio of Median Electronic to Median Physical	Median Total	Median Physical ¹	Median Electronic	Ratio of Median Electronic to Median Physical	Total	Physical ¹	Electronic
Overall	\$3.93	\$3.39	\$0.35	0.1	\$4.08	\$3.59	\$0.27	0.1	-3.6%	-5.6%	30.7%
Locale											
City	\$3.90	\$2.87	\$1.02	0.4	\$4.02	\$3.16	\$0.75	0.2	-3.0%	-9.1%	36.7%
Suburb	\$4.48	\$3.62	\$0.70	0.2	\$4.65	\$3.93	\$0.55	0.1	-3.6%	-8.0%	28.3%
Town	\$3.26	\$2.84	\$0.28	0.1	\$3.39	\$3.02	\$0.24	0.1	-3.8%	-5.8%	17.5%
Rural	\$4.09	\$3.70	\$0.22	0.1	\$4.29	\$3.92	\$0.14	0.0	-4.5%	-5.6%	50.8%
Population Size Served											
Very large (>25,000)	\$3.32	\$2.50	\$0.68	0.3	\$3.36	\$2.77	\$0.52	0.2	-1.4%	-9.7%	29.8%
Large (10,000–25,000)	\$3.55	\$3.01	\$0.42	0.1	\$3.69	\$3.18	\$0.34	0.1	-3.8%	-5.3%	22.6%
Medium (2,500–9,999)	\$3.81	\$3.42	\$0.27	0.1	\$3.94	\$3.57	\$0.19	0.1	-3.3%	-4.2%	36.8%
Small (<2,500)	\$5.32	\$4.92	\$0.20	0.0	\$5.57	\$5.22	\$0.12	0.0	-4.5%	-5.6%	71.9%

¹ The sum of Print Materials Expenditures and Other Materials Expenditures. The latter includes expenditures for materials such as microform, physical audio, physical video, DVD, and new formats.

NOTE: Median totals do not equal sum of median detail. Calculations are based on unrounded estimates; therefore, reported totals may differ because of rounding. Per person estimates in the table use the population of the legal service area.

SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

Table A4. Median Collections Expenditures per Circulation by Material Type, Locale, and Population Size Served, FY 2018 and FY 2014

Category	FY 2018 Expenditures per Circulation				FY 2014 Expenditures per Circulation				Percent Change from FY 2014 to FY 2018		
	Median Total	Median Physical ¹	Median Electronic	Percent Missing Circulation ²	Median Total	Median Physical ¹	Median Electronic	Percent Missing Circulation ²	Total	Physical	Electronic
Overall	\$0.68	\$0.63	\$0.83	11.8%	\$0.62	\$0.57	\$1.13	18.5%	9.7%	11.3%	-26.0%
Locale											
City	\$0.61	\$0.50	\$1.60	1.6%	\$0.58	\$0.48	\$2.23	2.5%	6.0%	5.5%	-28.2%
Suburb	\$0.67	\$0.59	\$1.33	4.3%	\$0.61	\$0.54	\$1.75	5.9%	9.6%	10.4%	-24.4%
Town	\$0.60	\$0.57	\$0.70	7.9%	\$0.56	\$0.52	\$0.99	15.4%	7.8%	10.0%	-29.1%
Rural	\$0.75	\$0.74	\$0.59	19.5%	\$0.69	\$0.66	\$0.69	29.3%	7.7%	12.2%	-14.2%
Population Size Served											
Very large (>25,000)	\$0.61	\$0.52	\$1.49	2.7%	\$0.56	\$0.48	\$2.06	4.9%	9.0%	8.7%	-27.7%
Large (10,000–25,000)	\$0.64	\$0.58	\$0.94	5.0%	\$0.57	\$0.53	\$1.31	10.2%	11.0%	10.9%	-28.4%
Medium (2,500–9,999)	\$0.67	\$0.66	\$0.60	11.3%	\$0.62	\$0.60	\$0.75	17.8%	7.5%	10.9%	-20.5%
Small (<2,500)	\$0.85	\$0.88	\$0.52	25.5%	\$0.82	\$0.79	\$0.52	37.0%	4.7%	10.8%	-0.2%

¹ FY 2014 Physical Materials Circulation is derived by subtracting Electronic Materials Circulation from Total Circulation.

² Libraries reporting zero (0) for Physical Materials Circulation or Electronic Materials Circulation are excluded from calculations. The percentage of these records is shown for context.

NOTE: Median totals do not equal sum of median detail. Calculations are based on unrounded estimates; therefore, reported totals may differ because of rounding. Per person estimates in the table use the population of the legal service area and exclude libraries with missing data.

SOURCE: Institute of Museum and Library Services, Public Libraries Survey, FY 2014 and FY 2018.

About the Institute of Museum and Library Services

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About the Public Libraries Survey

The Public Libraries Survey (PLS) is a national census of public library systems.

It is conducted annually by the Institute of Museum and Library Services in partnership with State Library Administrative Agencies and the Library Statistics Working Group, with the American Institutes for Research as the data collection agent. Its data elements cover library service measures of public library services, resources, and funding. The PLS is designed as a universe survey; the FY 2018 survey frame consisted of 9,249 public libraries in the 50 states, the District of Columbia, and selected U.S. territories. A total of 9,046 active public libraries in the United States responded to the PLS, for a response rate of 97.8 percent.