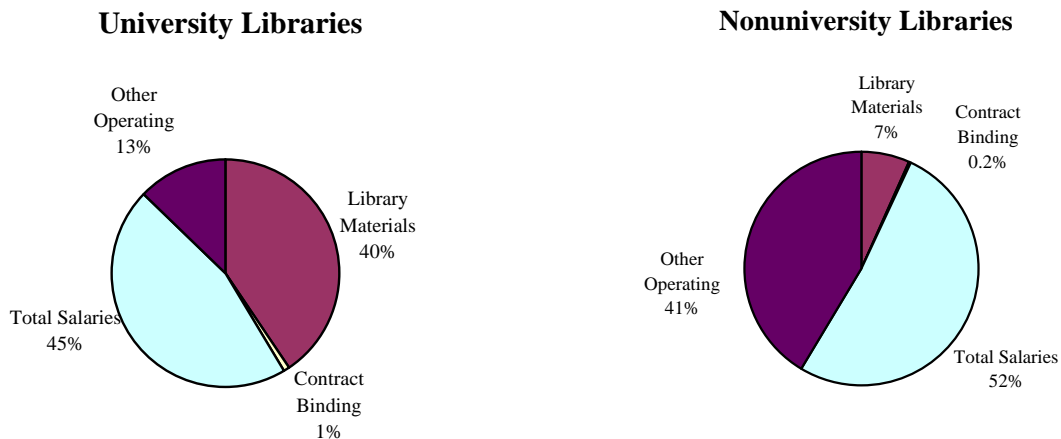


RESEARCH LIBRARY TRENDS

ARL Statistics 2004-05 is the latest in a series of annual publications that describe collections, staffing, expenditures, and service activities for the 123 members of the Association of Research Libraries (ARL). Of these, 113 are university libraries; the remaining 10 are public, governmental, and nonprofit research libraries. ARL member libraries are the largest research libraries in North America, representing 16 Canadian and 107 U.S. research institutions. The academic libraries, which comprise about 92% of the membership, include 14 Canadian and 99 U.S. libraries.

Statistics have been collected and published annually for the members of the Association of Research Libraries since 1961-62, and the data are available through an interactive Web interface. Prior to 1961-62, annual statistics for university libraries were collected by James Gerould, first at the University of Minnesota and later at Princeton University.¹ These data, covering the years 1907-08 through 1961-62, are now called the Gerould statistics.² The whole data series from 1908, which is available on the ARL FTP server,³ represents the oldest and most comprehensive continuing library statistical series in North America.

ARL libraries are a relatively small subset of libraries in North America, but they do account for a large portion of academic library resources in terms of assets, budgets, and the number of users they serve. The total library expenditures of all 123 member libraries in 2004-05 was almost \$3.6 billion; from that, roughly \$2.68 billion was spent by the 113 university libraries and more than \$900 million by the nonuniversity libraries. The pie charts below show how the two types of libraries divide these expenditures differently.



¹ Kendon L. Stubbs and Robert E. Molyneux, *Research Library Statistics 1907-08 through 1987-88* (Washington, DC: ARL, 1990).

² Robert E. Molyneux, *The Gerould Statistics 1907/08 – 1961/62*. (Washington, DC: ARL, 1986), <http://fisher.lib.virginia.edu/gerould/>.

³ <http://www.arl.org/stats/arlstat/mrstat.html>.

EVOLUTION OF DEFINITIONS: A MOVING TARGET

Definitions of the categories used in the *ARL Statistics* are based on the *Library Statistics*, ANSI/NISO Z39.7-1995 (Bethesda, MD: NISO Press, 1997),⁴ which was revised into the *NISO Z39.7-2002*.⁵ ARL revised the definitions in 2003-04, incorporating the clarifications formerly provided through the *ARL Statistics Q&A*.⁶ The interpretations are established through discussions within the ARL Statistics and Assessment Committee⁷ and with the ARL Survey Coordinators⁸ who have the responsibility for filling in the surveys. For example, see a discussion document regarding counting electronic serials.⁹

This year the existing definitions of the *ARL Statistics* data items were modified to include electronic resources, electronic journals, and e-books in the existing categories. For example, in 1999-2000 e-books were reported together with volumes held for the first time, as long as the library owned those e-books and they conformed to a print-equivalent model (see *ARL Statistics Q&A* for further clarification). In general terms, there is a sense that the *ARL Statistics*, which primarily focus on input and output measures, have served libraries adequately but in a limited way by describing the range of resources and service activities in a quantifiable manner. After a decade of testing and data collection in the *ARL Supplementary Statistics* survey, some new data elements migrated to the *ARL Statistics* in 2003-04. A new supplementary statistics survey has been developed and the data elements there focus primarily on electronic resources (e-metrics), which tend to be in flux. Development efforts tend to focus on the ARL New Measures Initiative projects¹⁰ which emphasize service quality, impact and outcome indicators (where there is general consensus that libraries lack agreed-upon frameworks), and tools they can use to measure these aspects of their operations successfully.

SERVICE ACTIVITY TRENDS

The success of an academic library is dependent not only on the information resources it owns or licenses, but also on the services it provides. ARL collects data about public service activities such as circulation (initial and total), reference transactions, library instruction (group presentations and participants in these presentations), and interlibrary borrowing and lending (see Table 1). These data, rather than being comprehensive for the range of user-initiated library activities, represent select service areas.

Readers should take care when using service indicators for comparing institutions, because local policies can influence the level of service activities. Loan periods, for example, are usually determined by local policies; thus, a library with a shorter loan period will report a larger number of circulation transactions than will a library with a longer loan period, other things being equal. Despite the standardization efforts at the definitional level, there is wide variation at the local level in terms of the processes used.

With this in mind, it is useful to look at the trends of these select services assuming that changes due to policies and other conditions affecting measurement of services are random across institutions. For example, the median value of the ratio of total to initial circulation has been gradually increasing over the last few years, indicating that users are more likely to renew library materials, or possibly that they want the

⁴ See also <http://www.techstreet.com/cgi-bin/pdf/free/152592/z39-7.pdf> .

⁵ NISO Z39.7 – 2002 Draft Standard for Trial Use: <http://www.niso.org/emetrics/>.

⁶ ARL Statistics Q&A: <http://www.arl.org/stats/arlstat/arlstatqa.html>.

⁷ ARL Statistics and Measurement Committee homepage: <http://www.arl.org/stats/program/meeting.html>.

⁸ ARL Survey Coordinators homepage: <http://www.arl.org/stats/coordinator.html>.

⁹ Julia Blixrud, "Counting Electronic Serials: A Discussion Document," <http://www.arl.org/stats/counting.html>.

¹⁰ ARL New Measures Initiative: <http://www.arl.org/stats/newmeas/newmeas.html>.

materials in their hands for longer periods of time. Keeping the material in the hands of the users also alleviates the space demands made on libraries by the continuing growth of their collections.

Graph 1 indicates that, since 1991, certain service areas are increasing whereas others are decreasing their activity levels. Overall, library staffing has remained roughly constant. Starting in 1996 circulation service transactions began to decline, in 1998 reference transactions began to fall, and in 2000 both categories dropped below 1991 levels for the first time. The median of group presentations increased to a new record high of 806 in 2003, and nearly matched that high with 803 in 2004-05. Meanwhile, the number of participants in those presentations continues to increase, with 13,034 participants for the typical research library. Interlibrary borrowing has also grown constantly since 1991, by an average of 1,096 transactions per year.

A variety of explanations have been voiced regarding the decline of the number of reference transactions. Many libraries are making a concerted effort to examine the changing user needs that impact reference services in general. Heavy users of library materials and services may make less use of in-person reference services than did such users in the era before the availability of online catalogs, remote access to indexing and abstracting databases, and electronic full-text resources delivered at the desktop. Often, those people who do approach reference librarians require more assistance than before. At the same time, virtual reference services are adding another dimension to the growing complexity of responding to reference questions. Libraries have instituted initiatives with a deliberate emphasis on direct contact between subject specialists and departments (shifting research consultation activity away from desk-based service). Thus, a simple count where each reference question gets a single "tally" cannot capture the varying dimensions and growing complexities of reference services. While patterns of behavior are changing and there is a decline in reference transactions, 66,300 questions per year are still made in the median ARL library.

Demand for library user education has been high recently. As seen in Graph 1, group presentations have risen by 58% since 1991, participants in these presentations by 93%, and interlibrary borrowing by 147%. Perhaps of most interest is the fact that by 2005, about one-third of the presentations conducted in a typical ARL library had been added since 1991. The typical ARL library offered 803 "teaching" sessions in 2004-05. If we assume that each session was at least an hour long, then the median ARL library offered the equivalent of 22 three-hour credit courses last year. Since a median number of 13,782 people received formal education through library instruction in a typical ARL library, those 803 "teaching" sessions averaged about 17 attendees. Information literacy has become an important program area for libraries and the Association of College and Research Libraries (ACRL) has developed widely used "Information Literacy Competency Standards for Higher Education."¹¹ Efforts are underway through the ARL New Measures Initiative to define how libraries contribute to student learning outcomes from a user-centered perspective.

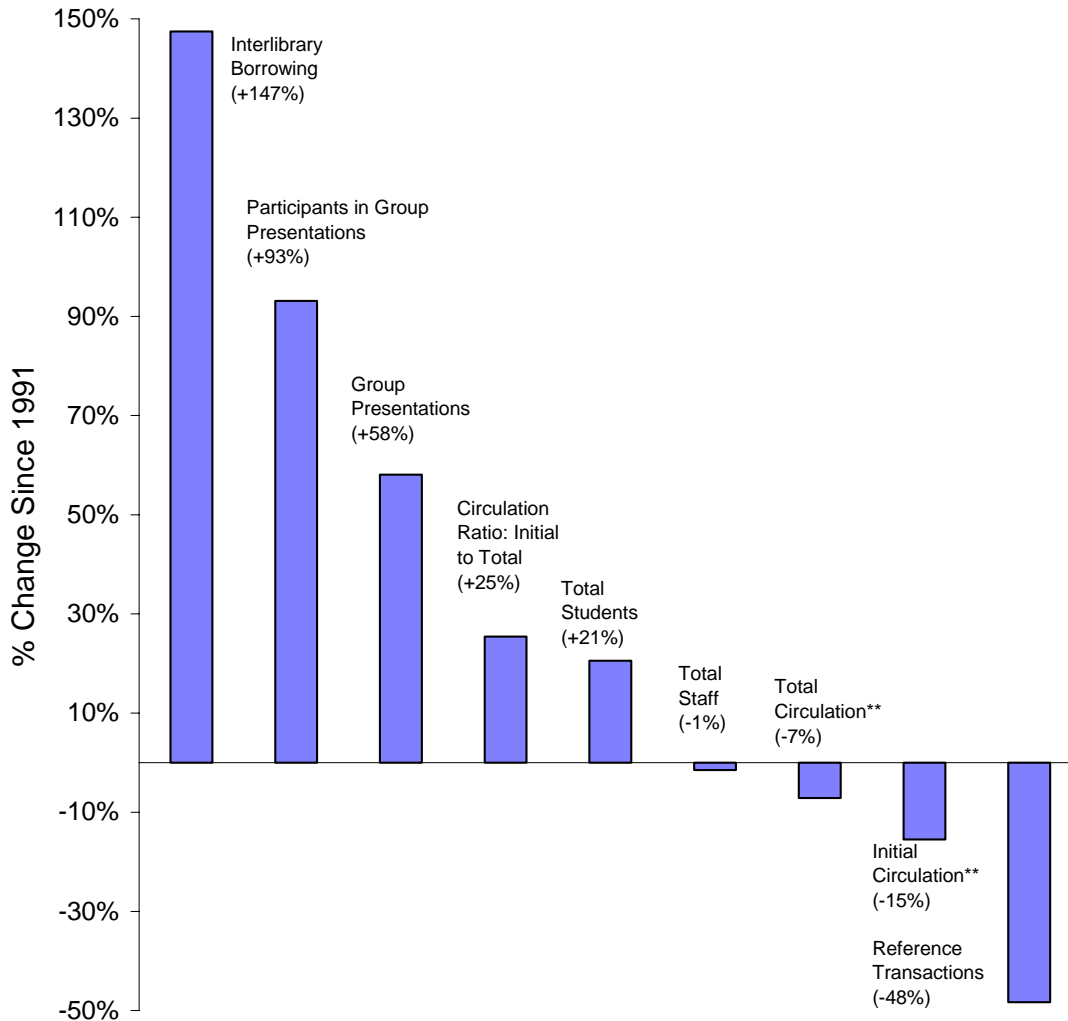
¹¹ <<http://www.ala.org/acrl/ilcomstan.html>>.

Table 1
Service Trends in ARL Libraries, 1991-2005
Median Values for Time-Series Trends¹²

Year	ILL: Borrowed	Group Pres.	Participants In Group Pres.	Reference Trans.	Initial Circ.	Total Circ.	Ratio of Initial to Total Circ.	Total Staff	Total Students
(Libraries)	(103)	(84)	(82)	(80)	(36)	(80)	(34)	(105)	(103)
1991	10,397	508	7,137	128,272	296,964	509,673	1.26	271	18,290
1992	11,362	526	7,154	132,562	342,989	554,579	1.27	265	18,273
1993	12,489	616	7,688	137,580	343,293	568,628	1.32	262	18,450
1994	14,007	568	7,831	150,144	369,996	572,749	1.31	264	18,305
1995	14,472	687	8,461	148,175	347,144	578,989	1.32	267	18,209
1996	15,278	719	8,410	156,306	336,481	560,244	1.39	264	18,320
1997	16,264	687	9,218	152,164	348,157	542,438	1.37	273	18,166
1998	17,656	698	9,462	134,944	354,924	514,574	1.37	273	18,335
1999	18,942	711	9,406	129,089	300,923	514,087	1.38	277	18,609
2000	20,475	722	9,596	117,027	273,231	482,542	1.42	267	18,908
2001	21,902	669	10,121	104,744	265,195	467,277	1.48	269	19,102
2002	21,339	776	11,350	96,829	251,146	462,223	1.51	279	19,925
2003	22,146	806	12,516	91,093	248,689	479,733	1.57	277	21,132
2004	25,737	757	12,864	85,478	261,526	496,369	1.60	273	21,562
2005	25,729	803	13,782	66,300	250,971	473,216	1.58	267	22,047
Avg annual % change	6.7%	3.3%	4.8%	-4.6%	-1.2%	-0.5%	1.6%	-0.1%	1.3%

¹² Series for Interlibrary Borrowing, Group Presentations, Participants in Group Presentations, Reference Transactions, Total Circulation, and Total Students revised due to unavailable data.

Graph 1
Service Trends in ARL Libraries, 1991-2005



** Total Circulation includes Initial and Renewals but excludes Reserve Circulation
 Source: *ARL Statistics 2004-05*, Association of Research Libraries, 2006

CHANGE IN SERIAL UNIT COSTS

The story of struggling library budgets during the 1990s had been told in terms of the “serials crisis.” Serial unit costs have been increasing much faster than inflation for almost two decades, as has been shown in Table 2 and Graph 2. The electronic environment may indeed be disrupting a dysfunctional system, but it is important to keep in mind that serial subscriptions exhibit extreme inelasticity of demand (i.e., demand is very high for continuing a subscription), sometimes to the detriment of other budget lines.

Table 2
Monograph and Serial Costs in ARL Libraries, 1986-2005
Median Values for Time-Series Trends¹³

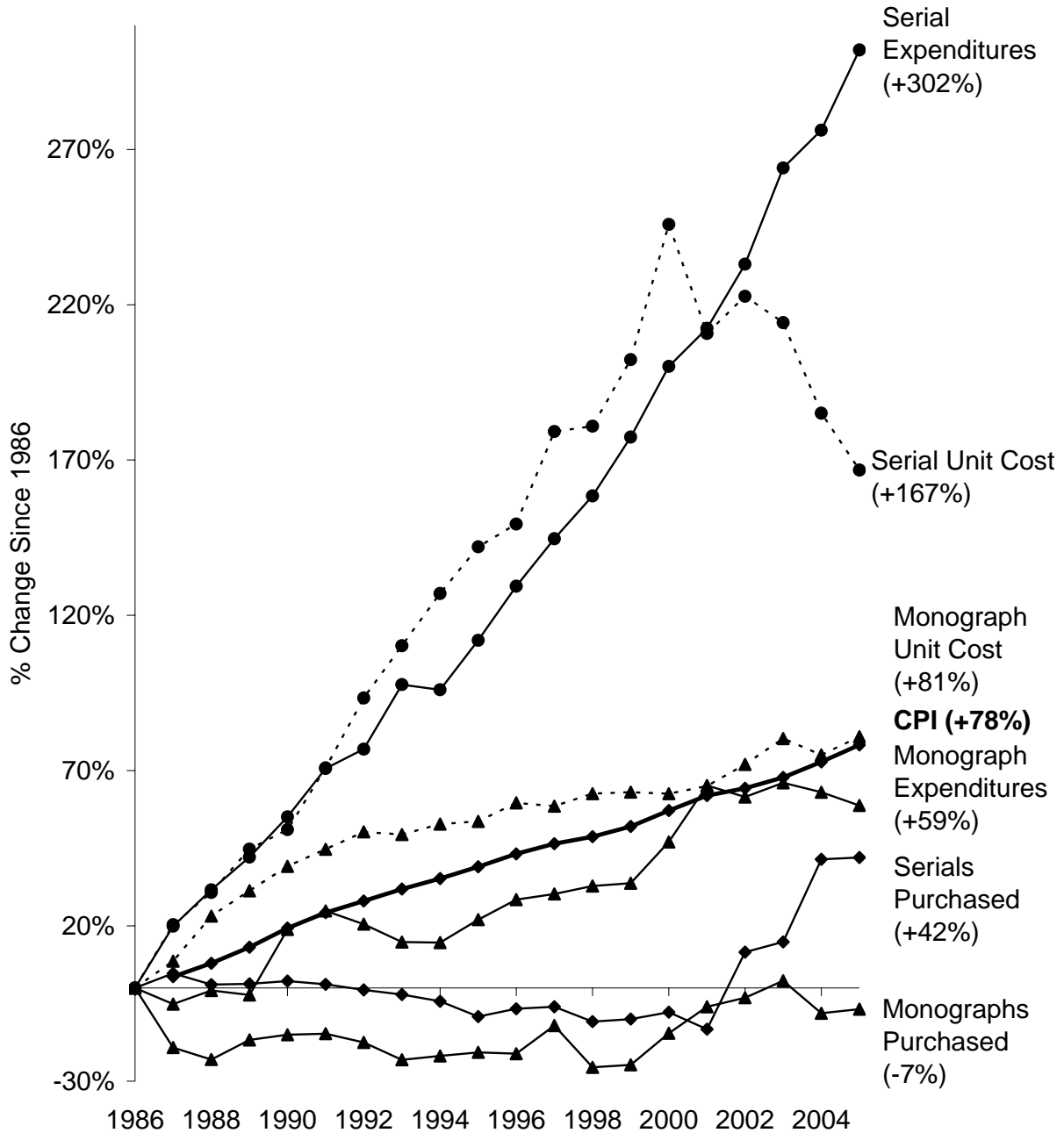
Year	Serial Unit Cost	Serial Expenditures	Monograph Unit Cost	Monograph Expenditures	Serials Purchased	Monographs Purchased
(Libraries)	(36)	(101)	(59)	(98)	(36)	(59)
1986	\$89.81	\$1,475,825	\$29.28	\$1,118,931	15,775	32,425
1987	\$108.12	\$1,769,353	\$31.81	\$1,060,754	16,514	26,204
1988	\$117.41	\$1,942,350	\$36.06	\$1,109,845	15,948	24,947
1989	\$129.95	\$2,097,789	\$38.44	\$1,093,858	15,983	26,997
1990	\$135.61	\$2,289,075	\$40.74	\$1,329,950	16,128	27,545
1991	\$153.46	\$2,519,065	\$42.35	\$1,396,566	15,962	27,659
1992	\$173.69	\$2,610,837	\$43.99	\$1,348,786	15,673	26,735
1993	\$188.79	\$2,917,381	\$43.74	\$1,284,116	15,441	24,933
1994	\$203.87	\$2,892,898	\$44.72	\$1,282,569	15,099	25,321
1995	\$217.38	\$3,128,181	\$44.98	\$1,365,046	14,320	25,695
1996	\$223.98	\$3,384,928	\$46.73	\$1,437,028	14,723	25,560
1997	\$250.74	\$3,610,714	\$46.42	\$1,457,789	14,820	28,494
1998	\$252.28	\$3,814,162	\$47.59	\$1,486,436	14,063	24,133
1999	\$271.51	\$4,093,793	\$47.74	\$1,496,687	14,192	24,398
2000	\$310.62	\$4,430,030	\$47.59	\$1,645,248	14,541	27,694
2001	\$279.07	\$4,610,327	\$48.31	\$1,848,622	13,682	30,459
2002	\$289.84	\$4,915,339	\$50.35	\$1,806,964	17,594	31,406
2003	\$282.20	\$5,372,822	\$52.80	\$1,858,280	18,115	33,177
2004	\$256.01	\$5,552,216	\$51.24	\$1,824,296	22,311	29,787
2005	\$239.58	\$5,933,378	\$52.96	\$1,776,416	22,404	30,217
Avg annual % change	5.3%	7.6%	3.2%	2.5%	1.9%	-0.4%

From the user perspective, ownership and access are interrelated; distinctions between the two may only exist inside the research library, where ownership of materials may be more closely linked to preservation functions. Data collected through LibQUAL+™ show that the demand relates to very strong user perceptions that libraries are not adequately meeting users’ need of access to full runs of journal titles and delivering full-text on the desktop.¹⁴ It is clear that some of the major scientific and technical publishers

¹³ Series for all items except Monograph Expenditures were revised due to unavailable data.

¹⁴ Bruce Thompson, Colleen Cook, and R.L. Thompson, “Reliability and Structure of LibQUAL+ Scores,” *portal: Libraries and the Academy* 2 (2002): 3-12; Colleen Cook, Fred Heath, and Bruce Thompson, “Score Norms for Improving Library Service Quality: A LibQUAL+ Study,” *portal: Libraries and the Academy* 2 (2002): 13-26; Fred Heath, Colleen Cook, Martha Kyrrillidou, and Bruce Thompson, “ARL Index and

Graph 2
 Monograph and Serial Costs
 in ARL Libraries, 1986-2005*



Source: ARL Statistics 2004-05, Association of Research Libraries, Washington, D.C.
 *Includes electronic resources from 1999-2000 onward.

have recognized this demand: for the third year in a row, the unit cost of serials declined and more and more serial subscriptions became available to libraries. A common sense explanation is that this is happening because of the proliferations of electronic journal subscriptions. It is not clear, though, whether the issues of preservation and quality control (such as assuring integrity and authenticity) of the electronic medium have been adequately addressed.

In informal conversations held with some ARL libraries, it seems that the inclusion of electronic serials in the counts of serial subscriptions purchased caused an increase in purchased serials—often, for a relatively small addition to the base subscription price, some publishers provide access to electronic resources for an additional 10 or 20% surcharge. Furthermore, the elimination of the print subscription may have resulted in discounted subscription fees for the electronic-only title; a library may have access to the electronic-only version of a journal for 80% (or some other fraction) of the print subscription price.

Other factors that may be contributing to the lower serial unit cost are consortial licensing arrangements for electronic journals, where the cost of the license is spread among participating libraries and market pressures to control the cost of serials. The Scholarly Publishing and Academic Resources Coalition (SPARC) was launched by ARL in June 1998 to promote competition in the scholarly publishing marketplace by creating “partnerships” with publishers who are developing high-quality, economical alternatives to existing high-priced publications. SPARC's activities are featured in the popular press, help increase awareness of the challenges facing libraries, and initiate specific actions aimed towards increasing competition in the largely monopolistic field of scientific scholarly publishing.¹⁵

During the past five years, libraries have expanded the amount of material to which they provide access by purchasing the same content in new formats and acquiring new content, often through bundling arrangements, as well as by managing the growing amount of content available through open-access mechanisms. The purchase of new and dual-format content via bundling or “big deal” arrangements¹⁶ is probably partly responsible for the recent decline in the growth rate for serial unit costs—libraries have added serial titles to their collections at lower incremental prices. These additional titles are often duplicate subscriptions or titles the library would not otherwise purchase. Depending on the publisher's financial model, some of the additional content may be purchased or some may come bundled or “free” with a subscription to other products.¹⁷

¹⁵ For more information, go to the SPARC homepage: <http://www.arl.org/sparc/>.

¹⁶ Kenneth Frazier, “The Librarians’ Dilemma: Contemplating the Costs of the ‘Big Deal,’” *D-Lib Magazine* 7, no. 3 (March 2001), <http://www.dlib.org/dlib/march01/frazier/03frazier.html>.

¹⁷ In the *ARL Statistics*, nonpurchased serials are not included in the calculation of serial unit cost.

OWNERSHIP AND ACCESS

Three years ago, the number of serials purchased increased above 1986 levels for the first time since 1992, and in 2004-05 the median of 22,595 subscriptions reached a new high in the history of the time series. This is most likely due to the same reasons cited above, including increased availability of electronic subscriptions and consortial arrangements. Research libraries purchased slightly more monographs in 2005 than in 2004; monographs purchased has risen above 1986 levels only once in the last nineteen years. Since 1986, the average annual increase for the serial unit cost has been 5.3%, and for the monograph unit cost 3.2%. Both are higher than the general inflation trend during the same period, and include both print and electronic resources (frequently with some duplication between the two media forms). Thus, the intellectual capital purchased by libraries is declining not only due to reduced purchasing power but also due to the degree of content duplication between the electronic and print media.

In 1986, the typical ARL library subscribed to 15,775 serials and bought 32,425 monographs for 16,660 students and 1,124 faculty. In 2005 it bought 22,404 serials and 30,217 monographs for 21,856 students and 1,355 faculty. Additionally, libraries are increasingly providing improved access without purchase of materials; Table 3 and Graph 3 show that the number of non-purchased serials received by the average ARL library increased by an annual average of 6.6% since 1986. This category consists of a number of types of serials, including government documents, electronic serials made available free of charge with the purchase of print counterparts, and open access journals. To some extent the increase is due to previously uncataloged government documents added to the library catalog as they were made available through programs such as MARCIVE. However, it is likely that emerging trends such as the open access movement¹⁸ and institutional digital repositories¹⁹ will continue to raise the number of serials received (not purchased) in the future. As alternative publishing models are becoming more widespread, libraries will increase the proportion of the holdings they provide access to,²⁰ whether they manifest themselves as serials or other new emerging forms.

Interlibrary borrowing and lending, which showed a marked growth in the last decade, seem to be stabilizing. Between 1986 and 2005, the number of items borrowed has more than tripled. ARL data show research libraries are lending 126% more items today than they did 19 years ago. In 1995-96, the cost of a lending transaction for research libraries ranged from a low of \$4.87 to a high of \$16.34, with an average cost of \$9.48 or, with an adjustment for inflation, a 2004-05 average cost of \$11.81.²¹

¹⁸ Mary Case and Judith Matz, "Framing the Issue: Open Access" *ARL: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI, and SPARC*, no. 226 (February 2003): 8-10, http://www.arl.org/scomm/open_access/framing.html.

¹⁹ Clifford A. Lynch, "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age" *ARL: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI, and SPARC*, no. 226 (February 2003): 1-7, <http://www.arl.org/newsltr/226/ir.html>; Raym Crow, "The Case for Institutional Repositories: A SPARC Position Paper" (Washington, DC: Scholarly Publishing & Academic Resources Coalition, 2002).

²⁰ William Y. Arms, "Quality Control in Scholarly Publishing on the Web," *The Journal of Electronic Publishing* 8, no. 1 (August 2002); and Rob Kling, Lisa Spector, and Geoff McKim, "The Guild Model," *The Journal of Electronic Publishing* 8, no. 1 (August 2002).

²¹ Mary E. Jackson, "Measuring the Performance," 2.

Table 3
Supply and Demand in ARL Libraries, 1986-2005
Median Values for Time-Series Trends²²

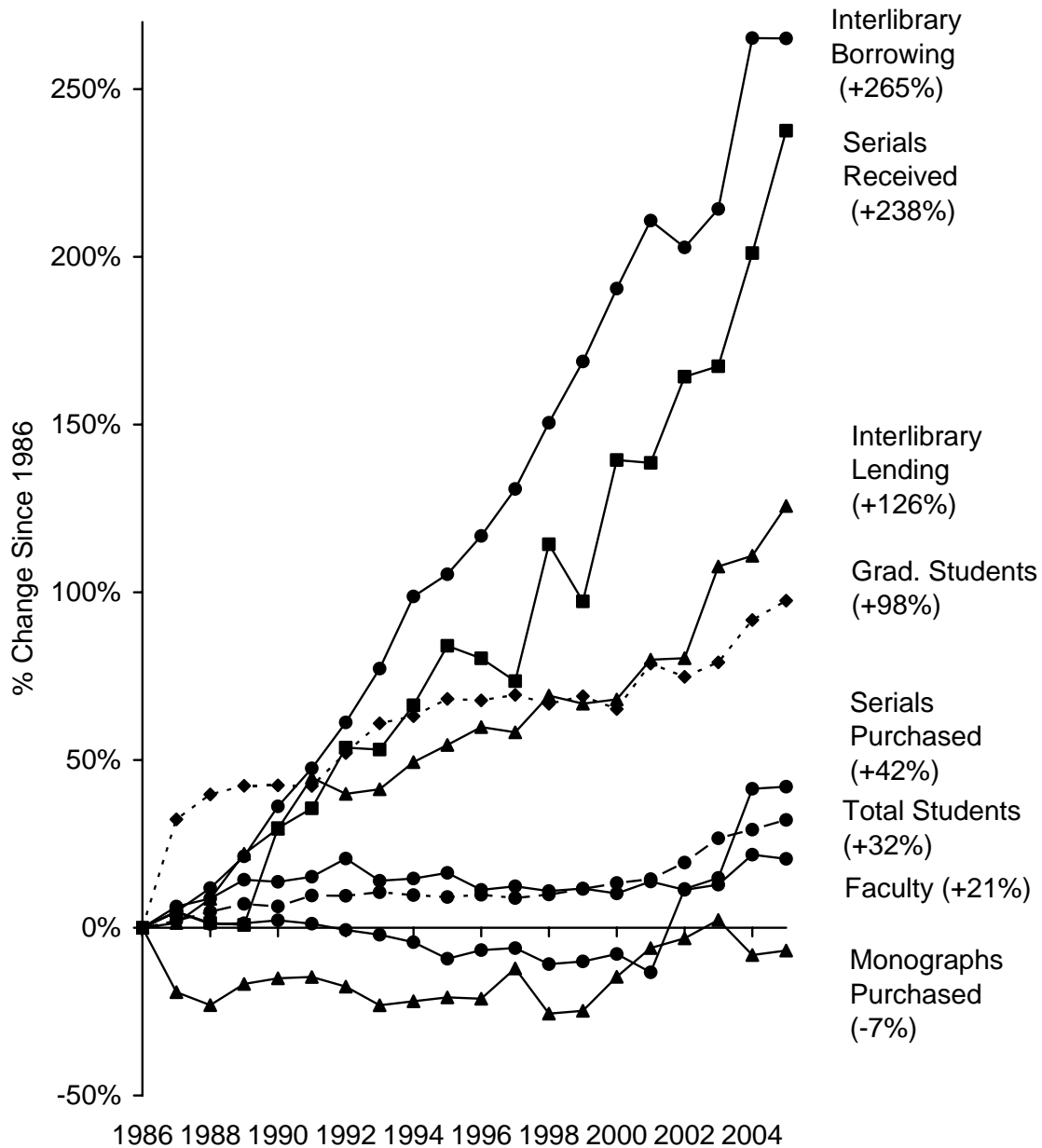
Year	ILL: Borrowed	ILL Lended	Graduate Students	Teaching Faculty	Total Students	Serials Purchased	Serials Received	Monographs Purchased
(Libraries)	(103)	(103)	(104)	(101)	(103)	(36)	(36)	(59)
1986	7,047	16,092	2,327	1,124	16,684	15,775	3,318	32,425
1987	7,387	16,318	3,078	1,195	17,029	16,514	3,477	26,204
1988	7,881	17,476	3,251	1,222	17,485	15,948	3,367	24,947
1989	8,547	19,638	3,312	1,285	17,866	15,983	3,345	26,997
1990	9,595	20,837	3,314	1,278	17,745	16,128	4,304	27,545
1991	10,397	23,285	3,310	1,295	18,290	15,962	4,500	27,659
1992	11,362	22,514	3,539	1,356	18,273	15,673	5,100	26,735
1993	12,489	22,740	3,745	1,281	18,450	15,441	5,082	24,933
1994	14,007	24,039	3,794	1,289	18,305	15,099	5,518	25,321
1995	14,472	24,864	3,914	1,308	18,209	14,320	6,107	25,695
1996	15,278	25,720	3,904	1,251	18,320	14,723	5,983	25,560
1997	16,264	25,463	3,942	1,263	18,166	14,820	5,757	28,494
1998	17,656	27,223	3,880	1,247	18,335	14,063	7,111	24,133
1999	18,942	26,837	3,933	1,255	18,609	14,192	6,546	24,398
2000	20,475	27,044	3,844	1,239	18,908	14,541	7,944	27,694
2001	21,902	28,950	4,159	1,279	19,102	13,682	7,915	30,459
2002	21,339	29,021	4,067	1,251	19,925	17,594	8,769	31,406
2003	22,146	33,421	4,167	1,268	21,132	18,115	8,871	33,177
2004	25,737	33,934	4,461	1,369	21,562	22,311	9,991	29,787
2005	25,729	36,325	4,595	1,355	22,047	22,404	11,203	30,217
Avg annual % change	7.1%	4.4%	3.6%	1.0%	1.5%	1.9%	6.6%	-0.4%

However, research libraries have responsibilities for future generations; cost considerations of short-term use are not adequate to ensure research level collections, whether in digital or analog formats. According to a report on collections and access issued by ARL, “developments in digital technology, the introduction of the Web and the Internet, and new methods of creating, sharing, and using knowledge have changed dramatically the traditionally understood definitions of library collections and access services. Building collections and creating access to them are no longer achieved just within the walls of the library. Broadly defined, collections and access responsibilities are no longer distinct spheres within research libraries. Collections and access responsibilities are inextricably linked—with each other, with other functions in the parent institutions, and, indeed, with other institutions. This interdependent and fluid environment presents challenges but, more importantly, it presents opportunities for librarians to take leadership roles in creating new information services in support of research and learning and thereby diffuse the library throughout the institution.”²³

²² All time series in this table were revised due to unavailable data.

²³ ARL Collections & Access Issues Task Force, “Collections & Access for the 21st-Century Scholar: Changing Roles of Research Libraries,” *ARL: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI, and SPARC*, no. 225 (December 2002), <http://www.arl.org/newsltr/225/>.

Graph 3
Supply and Demand
in ARL Libraries, 1986-2005*



Source: ARL Statistics 2004-05, Association of Research Libraries, Washington, D.C.

* Serial and monograph data includes electronic materials from 2000 onward.

EXPENDITURE TRENDS

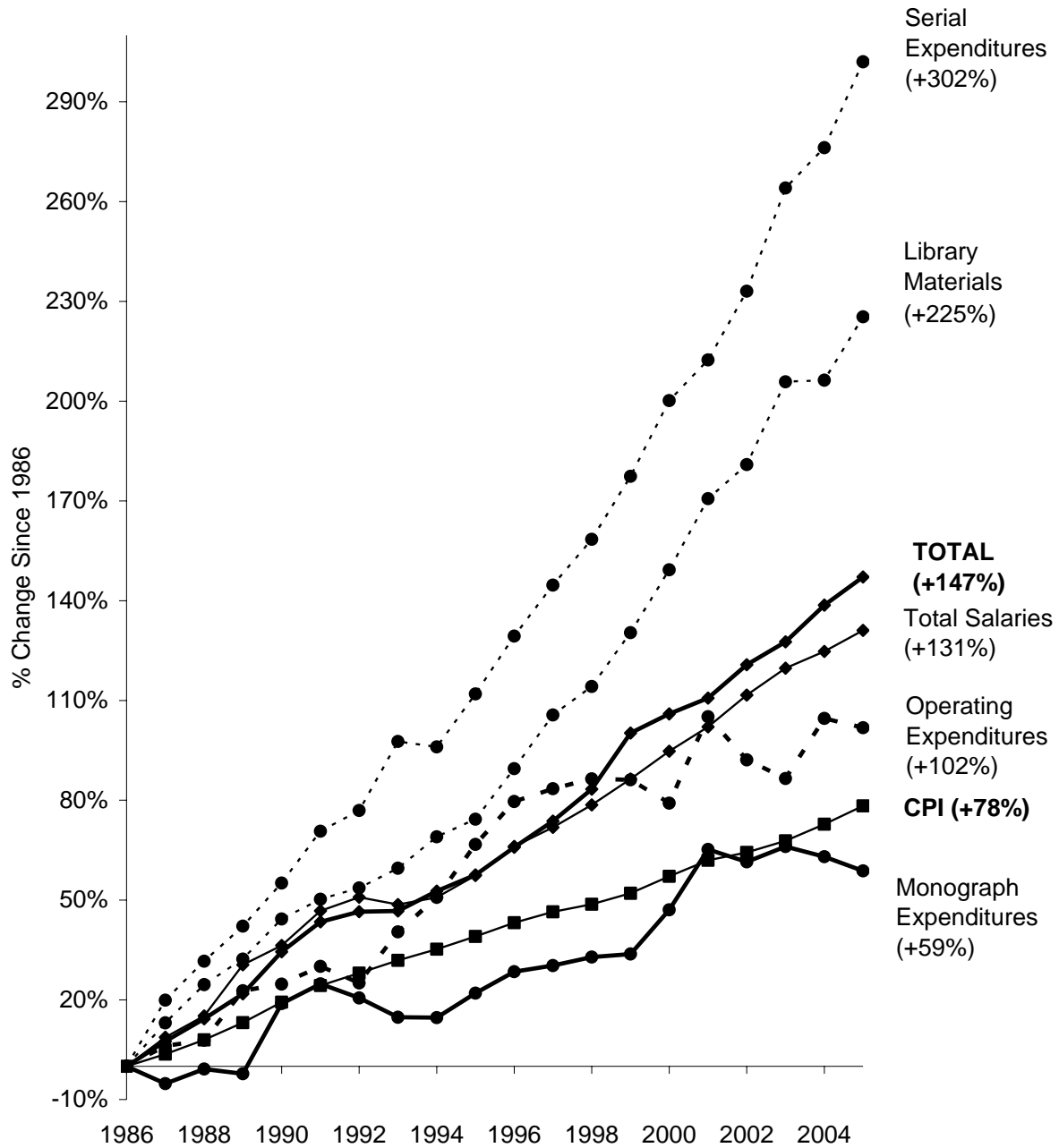
Library material budgets have risen sharply in order to sustain serial expenditures. Operating expenditures, including many automation expenditures, have doubled since 1986, but during the last five years have remained at relatively stable levels of investment—slightly more than \$2 million for the typical ARL library. The total salary expenditures median has increased only slightly over the past four years, indicative of the difficulties libraries are having in recruitment and the mechanisms they are trying to develop to compensate for the historically low salaries paid to their employees. Monograph expenditures continue to increase, but at a much slower pace to accommodate the sharply increasing serial expenditures. The annual consumer price index (CPI), included in Graph 4, provides a comparative reference for the increases in library expenditures.

Table 4
Expenditure Trends in ARL Libraries, 1986-2005
Median Values for Time-Series Trends – Unadjusted dollar figures²⁴

Year	Library Materials	Serial Exp.	Monograph Exp.	Total Salary	Operating Exp.	Total	CPI
(Libraries)	(105)	(101)	(98)	(104)	(104)	(105)	
1986	\$2,705,297	\$1,475,825	\$1,118,931	\$4,011,436	\$1,111,914	\$8,361,092	109.6
1987	\$3,058,479	\$1,769,353	\$1,060,754	\$4,361,646	\$1,180,167	\$8,990,001	113.6
1988	\$3,369,896	\$1,942,350	\$1,109,845	\$4,618,335	\$1,198,674	\$9,557,623	118.3
1989	\$3,577,405	\$2,097,789	\$1,093,858	\$5,236,292	\$1,364,558	\$10,183,315	124.0
1990	\$3,903,358	\$2,289,075	\$1,329,950	\$5,469,333	\$1,386,618	\$11,241,022	130.7
1991	\$4,064,344	\$2,519,065	\$1,396,566	\$5,885,814	\$1,445,735	\$11,990,794	136.2
1992	\$4,156,510	\$2,610,837	\$1,348,786	\$6,050,222	\$1,390,245	\$12,249,150	140.3
1993	\$4,316,674	\$2,917,381	\$1,284,116	\$5,962,470	\$1,561,122	\$12,265,696	144.5
1994	\$4,572,276	\$2,892,898	\$1,282,569	\$6,047,803	\$1,676,701	\$12,767,348	148.2
1995	\$4,715,203	\$3,128,181	\$1,365,046	\$6,312,770	\$1,853,586	\$13,171,893	152.4
1996	\$5,126,482	\$3,384,928	\$1,437,028	\$6,664,021	\$1,997,233	\$13,870,378	156.9
1997	\$5,562,742	\$3,610,714	\$1,457,789	\$6,893,582	\$2,039,957	\$14,526,674	160.5
1998	\$5,795,223	\$3,814,162	\$1,486,436	\$7,163,979	\$2,072,903	\$15,329,371	163.0
1999	\$6,232,365	\$4,093,793	\$1,496,687	\$7,476,532	\$2,069,887	\$16,737,261	166.6
2000	\$6,744,281	\$4,430,030	\$1,645,248	\$7,811,403	\$1,991,852	\$17,221,441	172.2
2001	\$7,322,507	\$4,610,327	\$1,848,622	\$8,106,666	\$2,280,493	\$17,620,048	177.5
2002	\$7,599,249	\$4,915,339	\$1,806,964	\$8,488,255	\$2,136,616	\$18,456,038	180.1
2003	\$8,273,171	\$5,372,822	\$1,858,280	\$8,813,191	\$2,073,913	\$19,030,188	183.9
2004	\$8,286,431	\$5,552,216	\$1,824,296	\$9,015,741	\$2,274,878	\$19,953,776	189.4
2005	\$8,801,962	\$5,933,378	\$1,776,416	\$9,268,364	\$2,243,592	\$20,663,012	195.4
Avg annual % change	6.4%	7.6%	2.5%	4.5%	3.8%	4.9%	3.1%

²⁴ Time series for Serial Expenditures, Total Salary Expenditures, and Operating Expenditures were revised due to unavailable data.

Graph 4
Expenditure Trends
in ARL Libraries, 1986-2005



Source: ARL Statistics 2004-05, Association of Research Libraries, Washington, D.C.

Table 5, “Resources per Student in ARL University Libraries,” shows that per-student borrowing activity through interlibrary loan has continued to increase at an annual average rate of 5.8% since 1986. Further, libraries are borrowing three times more items on a per-student basis than they did 19 years ago.²⁵ Table 5 also shows per-student acquisition levels for both serials and monographs; while monographs purchased per student dropped in 2004-05, the number of serials purchased per student increased by 12%. As a result, ARL libraries acquired 37% fewer monographs per student in 2005 than in 1986, but 30% more serials. ARL libraries acquired 1,100 serial subscriptions and 1,360 monographs per 1,000 students and the median number of volumes added was 3.27 per student, compared to the 4.14 volumes added per student in 1986. Libraries also reported fewer staff per student in 2005 as compared to 1986: in 2005, there was a median number of 11.9 total staff per 1,000 students, compared to the 1986 figure of 16 per 1,000.

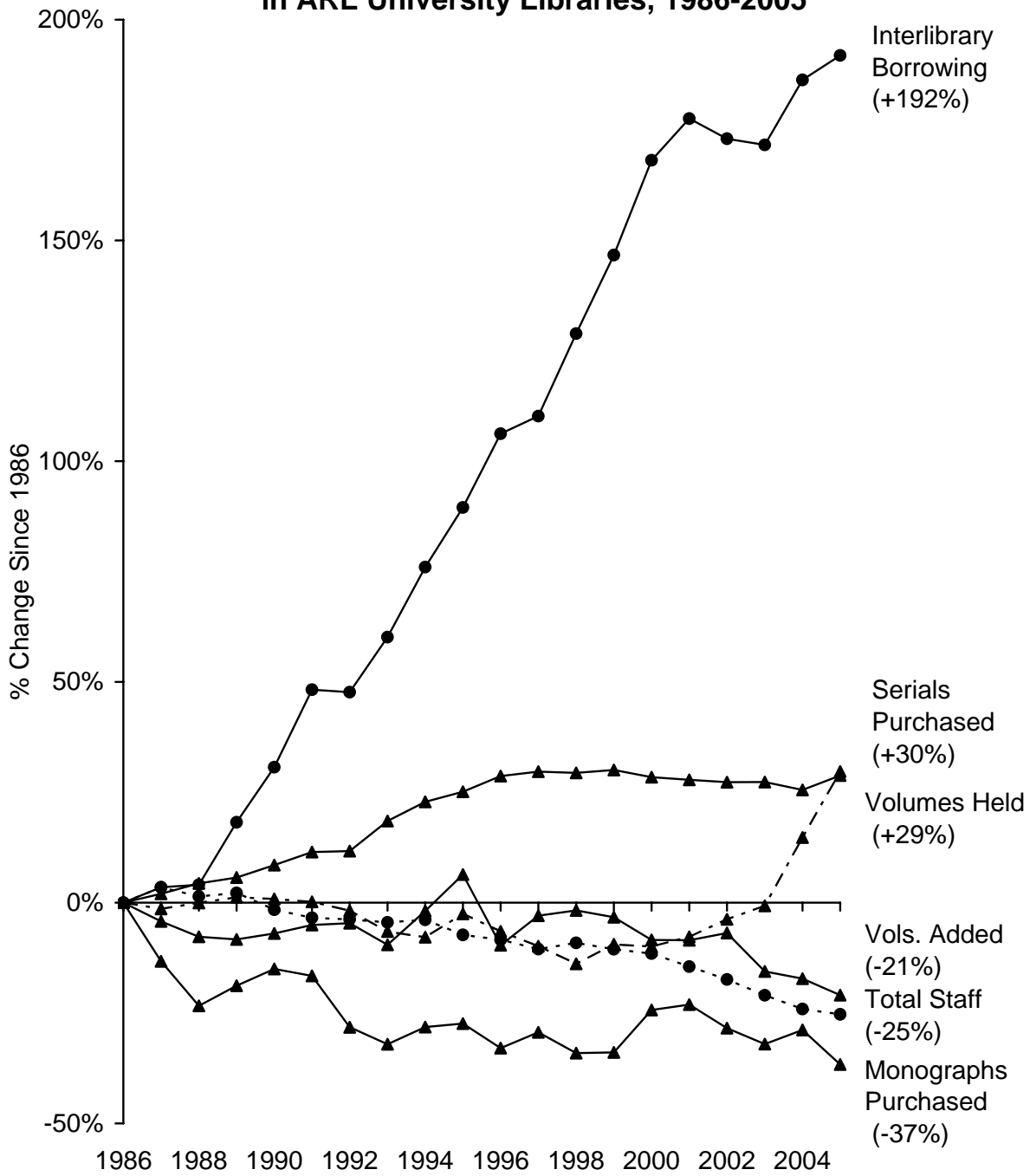
Table 5
Resources per Student in ARL University Libraries, 1986-2005
Median of Ratio Values for Time-Series Trends²⁶

Year	ILL: Borrowed	Volumes Held	Volumes Added (Gross)	Total Staff	Serials Purchased	Monographs Purchased
(Libraries)	(103)	(104)	(104)	(104)	(36)	(59)
1986	0.42	123.27	4.14	0.0159	0.85	2.15
1987	0.43	125.78	3.96	0.0165	0.84	1.86
1988	0.44	128.65	3.82	0.0161	0.85	1.65
1989	0.50	130.32	3.79	0.0163	0.86	1.75
1990	0.55	133.78	3.85	0.0156	0.86	1.83
1991	0.62	137.41	3.93	0.0154	0.85	1.79
1992	0.62	137.68	3.94	0.0153	0.84	1.54
1993	0.67	146.08	3.74	0.0152	0.80	1.46
1994	0.74	151.43	4.06	0.0153	0.79	1.54
1995	0.80	154.27	4.40	0.0147	0.83	1.56
1996	0.87	158.62	3.74	0.0146	0.80	1.44
1997	0.88	159.87	4.01	0.0142	0.77	1.52
1998	0.96	159.52	4.06	0.0145	0.73	1.42
1999	1.04	160.34	4.00	0.0142	0.77	1.42
2000	1.13	158.32	3.79	0.0141	0.77	1.63
2001	1.17	157.55	3.79	0.0136	0.79	1.65
2002	1.15	156.93	3.85	0.0131	0.82	1.54
2003	1.14	156.95	3.49	0.0126	0.85	1.46
2004	1.20	154.75	3.42	0.0121	0.98	1.53
2005	1.23	158.79	3.27	0.0119	1.10	1.36
Avg annual % change	5.8%	1.3%	-1.2%	-1.5%	1.4%	-2.4%

²⁵ This overall trend should not be interpreted rigidly, as it negates the varying experiences of individual libraries.

²⁶ All time-series in this table have been revised due to unavailable data.

Graph 5
**Resources per Student
 in ARL University Libraries, 1986-2005**



Source: ARL Statistics 2004-05, Association of Research Libraries, Washington D.C.

EXPENDITURES FOR ELECTRONIC MATERIALS

Starting in 2003-04, the *ARL Statistics* collected data on several items which previously had been collected only in the *ARL Supplementary Statistics*, all of which are listed in Table 6. Expenditures for electronic resources have all increased substantially since their introduction into the *Supplementary Statistics*, but none more than expenditures for electronic serials. E-serials expenditures were just \$11,847,577 from 63 reporting libraries in 1994-95; in 2004-05, 108 libraries reported almost \$330 million spent. These data are especially useful because they reflect monies spent on all electronic serials, while the *ARL Statistics* categories of “serials purchased” and “serials expenditures” include only those journals which provide full-text electronic versions to their subscribers. The Expenditures for Electronic Serials time series may be viewed as an alternative to the Serials Purchased series, both figures reflecting in their own way the influence the electronic serial is gaining in the modern research library.

Table 6
Electronic Materials Expenditures
In ARL University Libraries, 2004-05

	Sum	Number Reporting
Expenditures for Computer Files (one-time/monographic purchase)	38,744,076	104
Expenditures for Electronic Serials	328,166,027	108
Expenditures for Bibliographic Utilities, Networks, etc. (Library)	25,203,164	105
Expenditures for Bibliographic Utilities, Networks, etc. (External)	16,082,790	81
Expenditures for Hardware and Software	91,790,199	106
Expenditures for Document Delivery/Interlibrary Loan	12,951,510	106
Staffed Library Service Points	2,732	110
Library Service Hours	117.10 ²⁷	110

Furthermore, not only have electronic materials expenditures grown sharply in the past decade, but they have grown at a rate far exceeding that of library materials expenditures overall. As shown in Graph 6 (page 22), in every year of the last decade electronic materials expenditures have grown sharply, anywhere between three and ten times faster than materials expenditures have. The average ARL university library now spends more than 37% of its materials budget on electronic materials (Table 7), and fifteen ARL libraries report that they spent more than 50% of their materials budget on electronic materials (see Rank Order Table 20).

²⁷ Figure is not a sum, but instead it reflects average service hours per reporting institution.

TABLE 7
ELECTRONIC RESOURCES AND MATERIALS EXPENDITURES IN ARL UNIVERSITY LIBRARIES, 1992-2005

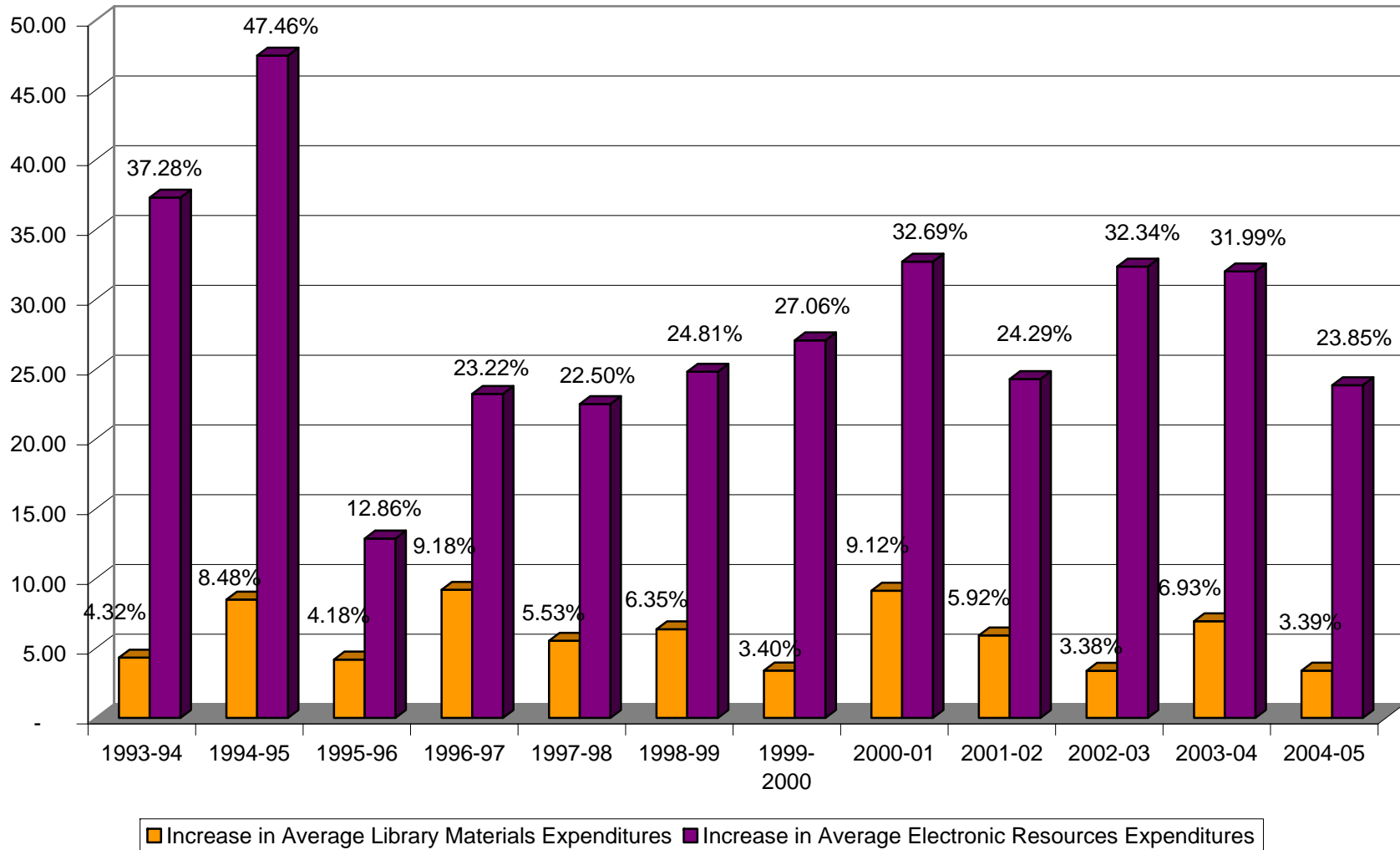
	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000*	2000-01	2001-02*	2002-03	2003-04	2004-05
a. Computer File Expenditures (monographic/onetime)													
Total	14,147,625	20,132,553	22,030,727	24,639,822	8,013,055	11,189,103	10,848,219	14,727,984	15,297,096	16,748,194	23,275,683	32,098,404	38,744,076
Average	172,532	236,854	247,536	262,126	87,098	122,957	121,890	161,846	159,345	167,482	225,978	314,690	372,539
Median	148,158	212,936	217,988	219,178	47,932	52,311	54,024	98,657	72,070	82,566	111,266	191,148	210,576
N		85	89	94	92	91	89	91	96	100	103	102	104
b. Electronic Serial Expenditures													
Total	N/A	N/A	11,847,577	15,170,971	40,956,696	49,497,141	67,124,554	84,343,868	117,415,618	154,418,679	205,300,292	269,601,241	328,166,027
Average	N/A	N/A	188,057	194,500	401,536	494,971	639,281	818,873	1,118,244	1,429,803	1,849,552	2,450,920	3,038,574
Median	N/A	N/A	156,754	172,805	355,922	426,722	571,790	736,317	992,067	1,272,965	1,649,361	2,348,463	2,824,962
N			63	78	102	100	105	103	105	108	111	110	108
c. Total Electronic Resources (Total a+b)													
Total	14,147,625	20,132,553	33,878,304	39,810,793	50,512,984	60,686,244	77,972,773	99,071,852	132,712,714	171,166,873	228,575,974	301,699,645	366,910,103
Average	172,532	236,854	349,261	394,166	485,702	594,963	742,598	943,541	1,252,007	1,556,062	2,059,243	2,718,015	3,366,147
Median	148,158	212,936	278,404	332,128	420,741	495,011	645,495	931,210	1,129,298	1,377,874	1,775,865	2,705,847	3,144,841
N	82	85	97	101	104	102	105	105	106	110	111	111	109
Total Library Materials Expenditures ²⁸													
Total	393,271,073	425,287,651	526,496,347	571,145,986	642,123,715	664,600,663	727,623,160	773,321,519	828,778,808	910,930,849	950,275,167	1,016,121,605	1,031,619,722
Average	4,795,989	5,003,384	5,427,797	5,654,911	6,174,266	6,515,692	6,929,744	7,364,967	7,818,668	8,281,189	8,561,038	9,154,249	9,464,401
Median	4,242,887	4,527,122	4,714,384	4,975,353	5,529,606	5,643,070	5,991,177	6,545,146	7,028,134	7,566,727	7,707,153	8,276,175	8,662,668
N	82	85	97	101	104	102	105	105	106	110	111	111	109
Electronic Resources Expenditures as a Percent of Total Materials Expenditures													
Average	3.60	4.75	6.39	6.83	7.76	8.85	10.56	12.88	16.25	19.60	25.02	31.33	37.46
Median	N/A	4.45	5.33	6.42	7.51	8.29	10.18	12.75	14.80	18.15	22.01	29.81	37.53
N	82	85	97	101	104	102	105	105	106	110	111	111	109
Expenditures for Bibliographic Utilities, Networks, etc. (External)													
Total	N/A	N/A	N/A	N/A	\$3,827,348	4,695,737	7,442,962	9,523,348	14,655,078	20,373,560	21,470,716	17,420,520	16,082,790+
Average	N/A	N/A	N/A	N/A	\$136,691	142,295	201,161	250,614	311,810	424,449	438,178	335,010	349,626+
Median	N/A	N/A	N/A	N/A	\$120,096	128,795	145,280	204,598	198,289	336,690	250,000	94,837	149,396+
N					28	33	37	38	47	48	49	52	46+

²⁸ Figures reflect Materials Expenditures only from those institutions that reported nonzero figures for Total Electronic Resources.

* In a recent review of past Supplementary Statistics data, some figures previously published in these columns were found to be incorrect and subsequently revised.

+ Includes only nonzero responses, to be consistent with past Supplementary Statistics reporting. Statistics that include zeroes can be found on page 51.

Graph 6
Yearly Increases in Average:
Electronic Resources vs. Total Materials Expenditures, 1993-2005



THE TRENDS CONTINUE

The Web has revolutionized the way libraries are delivering services, enabling them to offer more value ranging from remote access to online catalogs, indexing and abstracting tools, and full-text resources delivered at the user's desktop. The delivery of new and innovative services through digitization projects and distance learning technologies is transforming the brick-and-mortar library model to a virtual model.

Higher education is changing. Recently the well-known classification by the Carnegie Foundation for the Advancement of Teaching shows that institutions are increasingly described in many different ways, based on different characteristics. "The Carnegie Classifications has traditionally grouped institutions by degrees offered, so that doctoral institutions were in one group and community colleges in another, and so forth. The new classifications²⁹ take a very different approach. Institutions are grouped (multiple times) based on what is taught, to whom, and in what setting. The old system — with some revisions — will still be used."³⁰ The recent Spellings report calls for further evidence of accountability, accessibility, affordability and quality.³¹

Library roles are being redefined as the research and academic community undergoes profound changes. The ARL Statistics and Measurement program and its advisory Statistics and Assessment Committee continue to look for new ways to describe and measure the performance of research libraries and their contributions to teaching, research, learning, and community service. In a period of rapid technological change and fluctuation, the information gathered here represents only a basic and rudimentary picture of the major trends affecting research libraries, their resources, and their use. The challenge of describing libraries at a time when Google™ promises to digitize the largest research libraries of the world is a formidable one.

This data compilation does not assess the quality of a library in meeting user needs, nor does it provide a complete picture of investments in electronic resources and other innovations. Answers to these questions can only be found by other measures, such as asking library users about their real needs and then designing better service delivery systems. ARL is engaged in a variety of projects that aim to assess the library's impact on teaching, learning, and research, as well as the ability of libraries to control costs and add value to the services they provide. William Crowe captured the importance of the increased attention ARL libraries gave to measurement and assessment during the last decade by characterizing the movement as a "move beyond the rearview mirror approach."³²

Library assessment is gaining in momentum and importance within libraries³³ with a multiplicity of methods and tools now available from ARL to libraries including LibQUAL+®, MINES for Libraries™, DigiQUAL™, in addition to the regular ARL Statistics. Resource investments in electronic products are tracked through the *ARL Supplementary Statistics* and other pilot projects. The ARL E-Metrics pilot resulted in a revised *ARL Supplementary Statistics* in 2003-04.

²⁹ <http://www.carnegiefoundation.org/classifications/>

³⁰ *Inside Higher Education*, November 21, 2005.

³¹ The Secretary of Education, Margaret Spellings, has issued the Spellings Commission Report on higher education, found at <http://www.ed.gov/about/bdscomm/list/hiedfuture/reports/pre-pub-report.pdf>

³² William J. Crowe, "The End of History? Reflections on a Decade" *ARL: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI, and SPARC* 226 (February 2003): 12-13, <<http://www.arl.org/newsltr/226/endofhistory.html>>.

³³ Steve Hiller, Martha Kyrillidou and Jim Self, "Assessment in North American research libraries: a preliminary report card." *Performance Measurement and Metrics* 7 (2) (2006): 100-106.

StatsQUAL™ is a gateway to library assessment tools that describe the role, character, and impact of physical and digital libraries on research, teaching and learning including both new and innovative tools as well as the traditional descriptive data collected through ARL Statistics. StatsQUAL™ is an effort to present these tools in a single powerful interactive framework that integrates and enhances data mining and presentation both within and across institutions. Enhancements and improvements in the StatsQUAL™ interface are iterative and evolving as we move into the future.

In conclusion, those using the *ARL Statistics* to compare individual libraries should consult the extensive “Footnotes” section and the symbols in the “ARL Library Data Tables.” Although definitions used in the *Statistics* aim for consistency, differing reporting practices do exist. To aid comparability, Canadian library expenditures are expressed in U.S. dollars, at the rate of 1.24971 Canadian dollars to one U.S. dollar. This exchange rate is the average monthly noon exchange rate published in the *Bank of Canada Review* for the period July 2004–June 2005. Expenditures reported in Canadian dollars are given in the “Footnotes.”

The quantitative rank-order tables presented in this publication are not indicative of performance and outcomes and should not be used as measures of library quality. In comparing any individual library to ARL medians or to other libraries, one must be careful to make such comparisons within the context of differing institutional goals and local characteristics.

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Association of Research Libraries
October 31, 2006