

Database Use Patterns in Public Libraries

Database usage data from a random sample of ninety-eight public libraries and library systems in the United States and Canada reveal patterns of use. Library users at all sizes of public libraries tend to use research databases most frequently early in the week, at midday, and at times that correspond to the academic calendar (November in this six-month sample.) Peak usage varies with size of library, but a capacity of between one and ten simultaneous users will satisfy 99 percent of demand in every size of library. A questionnaire sent to these libraries revealed many other factors that might influence database use, including posting signs or preparing handouts, availability of remote login, and placement of a database on the library's homepage. Only the number of workstations, adjusted for population, was found to be statistically correlated with amount of use.

Public librarians often find themselves negotiating complex licensing agreements when selecting fee-based digital resources for their libraries. Resources that will be offered online through a library may be priced by vendors in a variety of ways. A popular pricing scheme for public libraries involves negotiating a price that depends on the number of users allowed online at any one time on any one database. This simultaneous (or concurrent) use pricing scheme allows libraries to keep costs down and pay only for the number of users likely to be needing a database at one time. The success of this pricing scheme depends on accurate estimates of how many simultaneous users should be supported. If too few are supported, users get frustrated by system "busy" signals; supporting too many simultaneous users results in unnecessarily expending scarce resources on higher fees.

Predicting likely numbers of simultaneous users is especially difficult when there is no history of prior usage. The library that is leasing a new product or offering online access for the first time must often guess about how much each database will be used. Usage data from other public libraries may, however, help similar libraries to predict levels and patterns of use. Other factors such as how many workstations are available in a library and whether or not the library allows remote access may also complicate this picture.

A two-phase study of public libraries helped identify patterns of database use, levels of simultaneous use, and what factors might influence this use. Online data captured from ninety-eight public libraries reveal (1) how many users are logged on

simultaneously to selected online research databases and (2) the time of day, week, and month when users are searching the most. Examination of these data may help other libraries negotiate simultaneous usage licenses and estimate the number of workstations and ports required.

Usage data do not show, however, what each individual library is doing, if anything, to encourage use of databases. In a supplemental survey, each library for which usage data were gathered was asked about its specific environment for online access, and information was gathered about factors that may influence online use.

Review of the Literature

Historically, usage studies were used to predict an appropriate number of chairs to provide in the library or to adjust staffing schedules to correspond to peak

Reference & User Services Quarterly, vol. 40, no. 1, pp. 39-52.

© 2000 American Library Association. All rights reserved.

Permission granted to reproduce for nonprofit, educational use.

Carol Tenopir is a Professor in the School of Information Sciences at the University of Tennessee; e-mail: ctenopir@utk.edu.

Eleanor J. Read is a an Assistant Professor and Social Sciences Data Services Librarian at the University of Tennessee; e-mail: eread@utk.edu.

Received May 1, 2000; accepted for publication July 3, 2000.

times. Later studies helped libraries determine how many terminals were required for their new online catalogs. A 1983 report incorporated queuing models to recommend appropriate numbers of terminals for online catalogs.¹ Turnstile counts have been used to optimize reference department staffing or pickup schedules for shelving. Turnstile counts show that peak usage periods in academic libraries correspond to the academic calendar and daily class schedules.²

Patterns or levels of use from within a library may be different from remote use patterns. The New York Public Library Research Libraries compared patterns for remote usage of their OPAC with patterns of usage from within the libraries. They found that patterns for remote searching of the OPAC are distributed more evenly over each day and within each week than in-library searching, and a "large part of remote searching occurred when the Research Libraries were closed."³ In a call for better computerized monitoring of remote users, Peters discussed the widespread belief that remote users will likely follow "diurnal" usage patterns, but suggested that this may only be true in metropolitan areas "already noted for diurnally diffuse human behavior."⁴

Data such as turnstile counts or other measures of amount of use are not sufficient to reveal *why* a particular resource is used. Townley and Murray found in a study of six southwestern academic libraries that database use did not fit a predictable pattern across libraries and databases. Database use is influenced by the length of time the database has been available (available more than one year results in heaviest use), limiting the forms of access to the database, the source of the database (locally loaded and Internet-based databases were preferred), and the availability of user instruction in the library.⁵

Librarians' attitudes or factors such as convenience, accessibility of a database through menu screens, or the availability of training materials might be expected to influence the amount of use that any specific resource such as an online database receives. Tenopir and Ennis analyzed university reference librarians' attitudes toward electronic reference products and changes throughout the 1990s.⁶ Librarians reported that users prefer electronic reference products over print resources, both from within the library and through dial-up access. End-user online searching of commercial databases is now an integral part of library reference services and users have come to expect online access through their libraries.

Collection development and reference librarians now spend much of their time evaluating and selecting online resources, a task more complex than, but not unlike, traditional selection and collection building. Added to the traditional task of evaluating quality, content, coverage, and ease of use, is the need to select the best possible pricing options from among

many alternatives and to negotiate online licensing agreements.⁷ The best pricing option will vary from library to library and, within a library, may be different for heavily used resources than for those used less often.

The information reported here is part of a larger study that examines patterns and factors of use for both academic and public libraries.⁸ This study demonstrates that, while the exact amount of use varies with the size and type of library, the usage patterns in academic and public libraries of all sizes are similar. Although libraries have their own unique situations, learning from other similar libraries may be the best way to estimate how many users will likely use a database and when that usage will occur. The present article updates, corrects, and expands on some of the data in these earlier reports. Usage data show how much online databases are used in public libraries; the survey information begins to look at why they are used.

Phase 1

Usage Data—Methods

Most studies of library use focus on a single library or a single library system. Measuring online usage for a variety of sizes of libraries is more difficult than measuring access to a single library's resources. Online use from many libraries searching comparable databases must be captured over a period of time to give a broad picture that will allow prediction of patterns for individual libraries. A major database producer and aggregator agreed to provide usage data for all of its customers to make it possible to observe both remote and in-house online activity for commercial databases from many libraries. This database aggregator provides online access to many bibliographic, full-text, and directory databases, thirty-seven of which were used by one or more public libraries in this study.

Many of the databases offered by this aggregator include overlapping records aimed at different audiences. For example, the same journals and magazines may be available in an indexing-only version, a full-text version, or a combination version. Versions indexing thousands of titles may be leased to large libraries; small libraries may prefer versions with fewer, selected titles. Rarely does the same library purchase overlapping titles, although a library may purchase separate current and backfile versions or choose a combined version. Some databases are subject-specific (business journals, for example); others are aimed at a general interest audience.

A random sample of one hundred public libraries

Table 1
User Population Categories for Public Libraries

Population Served	Number in Sample	Surveys Received
Unspecified	6	
25,000 or less	10	7
25,001 to 50,000	10	7
50,001 to 100,000	17	12
100,001 to 250,000	19	13
250,001 to 500,000	18	10
500,001 to 1,000,000	14	8
More than 1,000,000	4	3
Total	98	60*

* Includes more than one survey for two library systems.

in the United States and Canada was taken from this company's list of more than 1,200 library customers. From this sample, usable online data were available for ninety-eight libraries. These libraries serve populations from less than 25,000 to more than one million people. Table 1 shows how population size was distributed in the study sample, across seven population groups.

Online usage for every library is captured automatically by the database provider in five-minute intervals twenty-four hours a day. Even with a sample of only ninety-eight libraries, a year's worth of data would yield more than ten million data points for every database. Therefore, for this study, usage data were sampled once per hour (on each half-hour), for sixteen hours per day (8 A.M. to midnight, eastern time), for a period of six months (July to December 1997), resulting in more than 288,000 data points per database. In order to report all sample times in local time, the hourly data were converted into the local time for each library, taking into account daylight savings time for those areas that observe it. Since the database company's computer was set to eastern time, data from libraries in western time zones begin and end earlier.

Usage data reveal how many simultaneous users are logged on to any one database at any of the sampled times. Time stamps on the data allow us to draw patterns that show average numbers of users by time of day, day of the week, and month for each size of library and each database or database group.

In this analysis, the databases used by the libraries were examined in four different groupings: (1) all thirty-seven databases together; (2) eleven databases that together cover general magazines and journals (including full-text, indexing-only, backfiles, and current files); (3) nine directory or bibliographic databases that specialize in business information; and (4) three databases that provide health-related information, one of which was the database used by the greatest number of libraries in the study.

Usage Data—Analysis

The number of simultaneous users for all thirty-seven databases in all ninety-eight libraries ranged from zero users (the mode and median) to thirty-nine users, with a mean of 0.30 and a standard deviation of 1.15. Although the range and exact number of users varied by size of library, the patterns of use, including peaks and valleys, are quite similar. The busiest time for online research in or from public libraries is between 11 A.M. and 5 P.M. (local time), on Mondays, in November.

It is likely that May would also be a high use month as the school year is coming to an end. Unlike the patterns found in academic libraries, Saturdays are also busy online days in public libraries and usage patterns overall are flatter. Public libraries see substantial use of online research in July in addition to November and experience more consistent usage throughout the week.

Although the usage peaks correspond to the peak hours for in-house library use, 70 percent of these libraries also offer remote online access. It appears that not many users choose to work online at times other than the normal hours that the physical library is open, even if they can be working from home or the office. Figures 1, 2, and 3 show these patterns of use aggregated for all databases, but separated by size of library.

Patterns of use for eleven general databases together show similar patterns of use (figures 4, 5, and 6). The mode and median are zero, the mean is 0.47, and the standard deviation is 1.61. The patterns of use for the health information group are very similar, so are not presented here.

The eleven business databases, on the other hand, have more evenly distributed use during the work week, and their July usage is closer to the peak November usage than the other groups. Figures 7, 8, and 9 show this contrast. Perhaps this is because most of the use of these databases comes from businesses that are located in the vicinity of the public library. Small businesses in particular may rely on public library business collections and, unlike schools, they work throughout the summer. Use of the general-interest databases, on the other hand, may be dominated by students doing class assignments.

As to be expected, given their more specific focus, the usage of the business and health databases is lower than that of the general periodical databases. The overall mean for business databases is 0.15, with a standard deviation of 0.59; the mode and median are zero. Health databases have a mean of 0.22

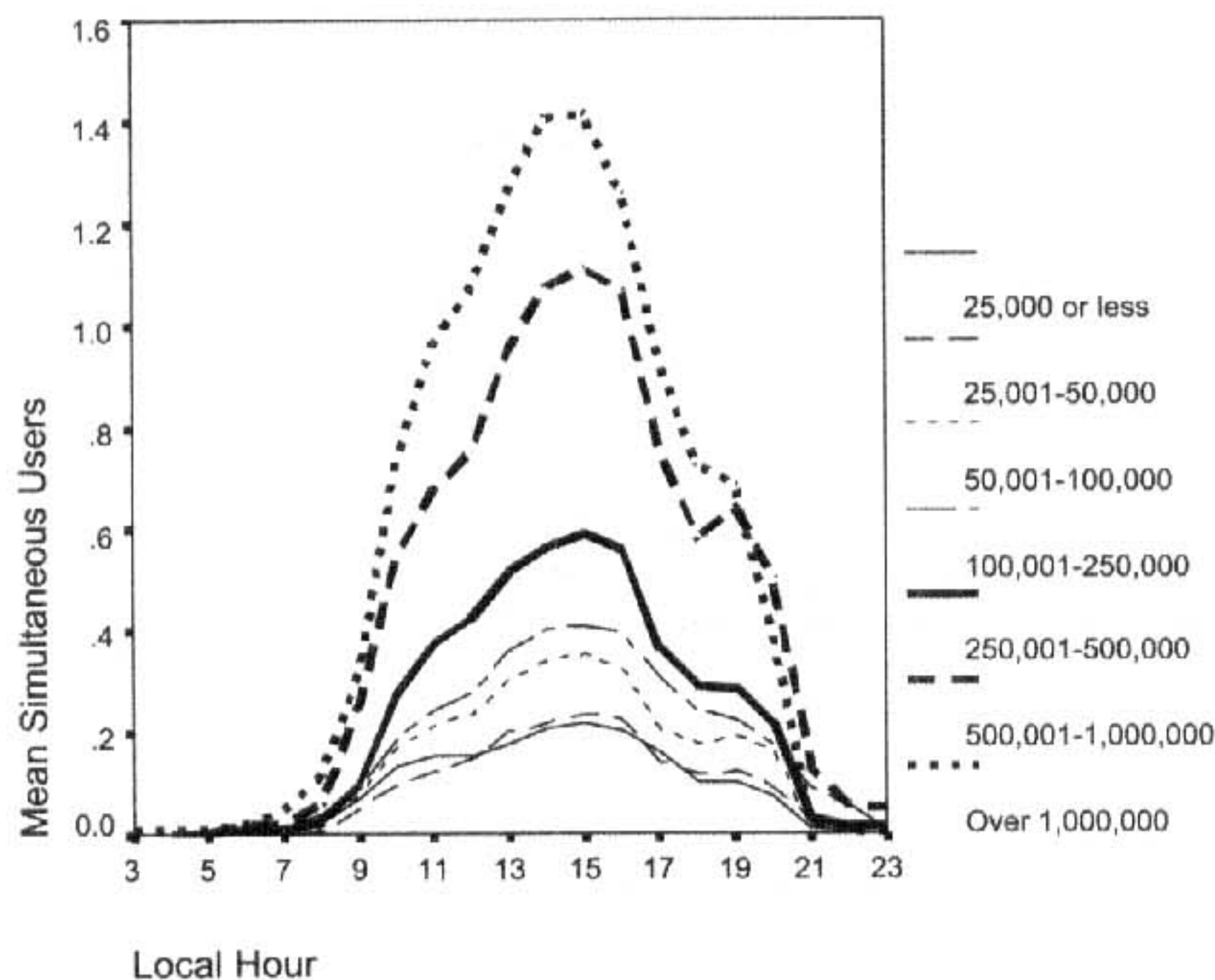


Figure 1

Average Simultaneous Use Patterns by Time of Day, Public Libraries by Population Size

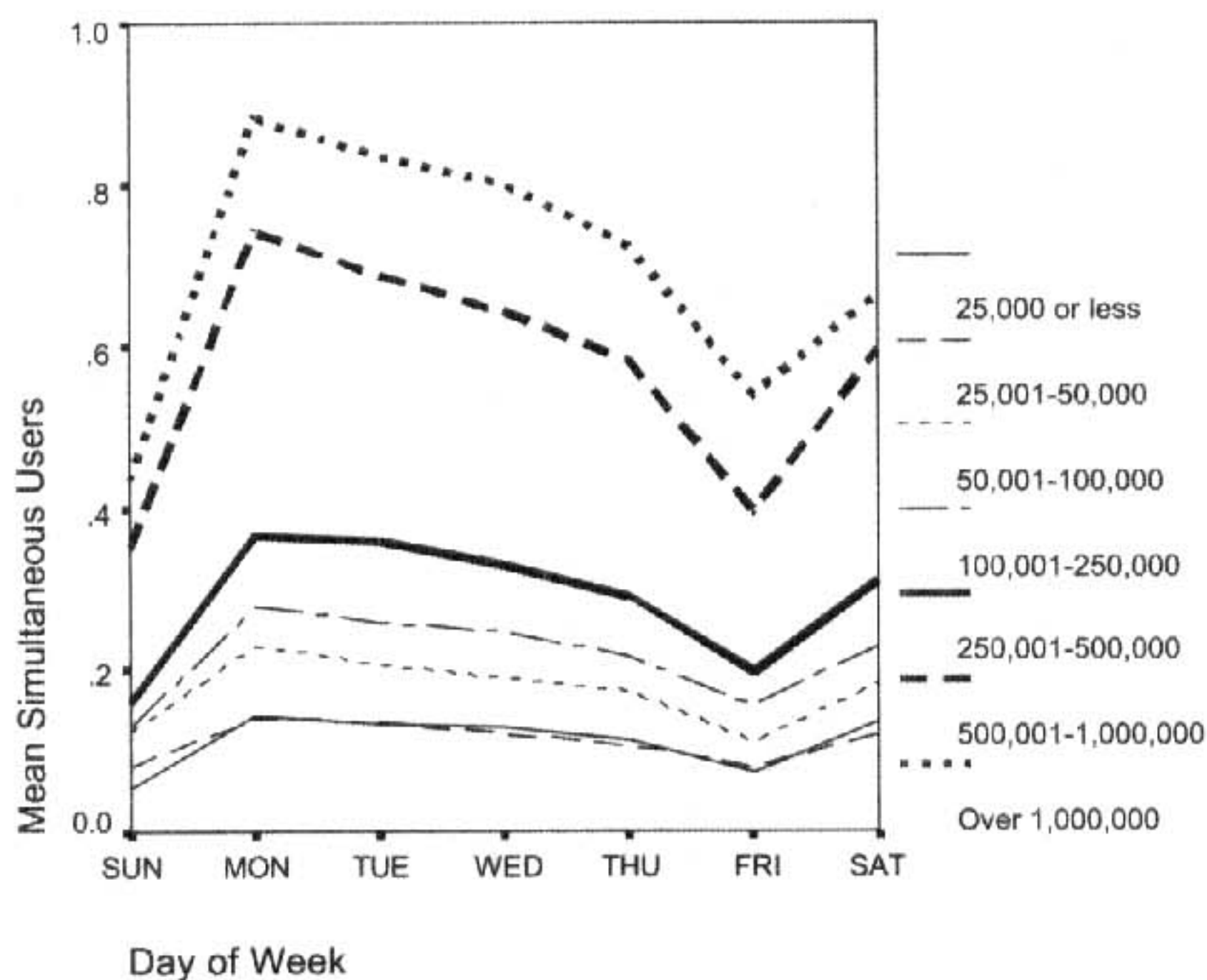


Figure 2

Average Simultaneous Use Patterns by Day of Week, Public Libraries by Population Size

simultaneous users and a standard deviation of 0.69; the mode and median are zero.

While relative usage patterns are useful for identifying times of heavy demand, they do not show the true impact of multiple users on workstations, online

ports, and staff. A better way to show impact is to measure how often multiple users are logged on. Tables 2, 3, 4, and 5 show how many simultaneous users are logged on at any one time for all databases (table 2), the eleven general interest databases (table 3), the nine business databases (table 4), and finally, the three health information databases (table 5). (Note that the tables do not include every discrete number of users.)

Unlike use of a library's catalog, simultaneous usage of a reference database is relatively uncommon. Providing access to only one user for a general interest periodicals database, for example, would be satisfactory 95 percent of the time in very small public libraries, but only 75 percent of the time in libraries serving populations of more than one million. Allowing five simultaneous users would be satisfactory 99 percent of the time in libraries with up to one-quarter million potential users and 89 percent of the time for libraries serving populations over one million (table 3).

Special interest databases receive even lower amounts of simultaneous use. Nearly 99 percent satisfaction could be achieved for access to business resources with four simultaneous users in libraries serving any population size (table 4). Achieving 100 percent satisfaction would require allowing as many as nineteen simultaneous users. Since nearly 99 percent (or more) can be met with just four, aiming for 100 percent satisfaction is neither reasonable nor cost beneficial.

Librarians should consider not only the size of the population, but the type of database they are purchasing. In most libraries, general interest titles will get more use than more specialized databases,

such as business or medical databases. For example, as shown in table 5, most types of libraries could achieve 97 to 99 percent satisfaction rates for health databases by accommodating only three simultaneous users.

Table 6 summarizes the simultaneous use figures, by showing the number of simultaneous users needed to meet demand 99 percent of the time for all databases aggregated, for each database group, and each population group. Clearly, databases that cover specialized topics or appeal to a specialized audience, require the capacity for fewer simultaneous users.

Phase 2

Survey Data—Methods

Usage data reveal typical patterns of use, but do not identify why or how the specific environment might affect online use. Information about unique environmental factors that may influence online use in individual libraries was sought by sending a questionnaire to each of the libraries in the sample. Survey questions, as shown in the appendix, were grouped in four categories: (1) "Information about Your Library"; (2) "Information about the Databases You Provide"; (3) "Information about Databases from . . . [the aggregator]"; and (4) "Other Factors." Sixty libraries responded and all size categories were represented, as shown in table 1.

Survey Data—Analysis

Approximately 83 percent of the libraries that responded to the survey offered access to reference databases on ten or more workstations. Seventy-five percent offered access to the company's database on three-quarters or more of their public workstations, while only 22 percent had dedicated workstations. Multipurpose workstations that allow access to the library's online catalog and other online databases were the rule.

Survey respondents reported that the databases analyzed in this study are among some of the most

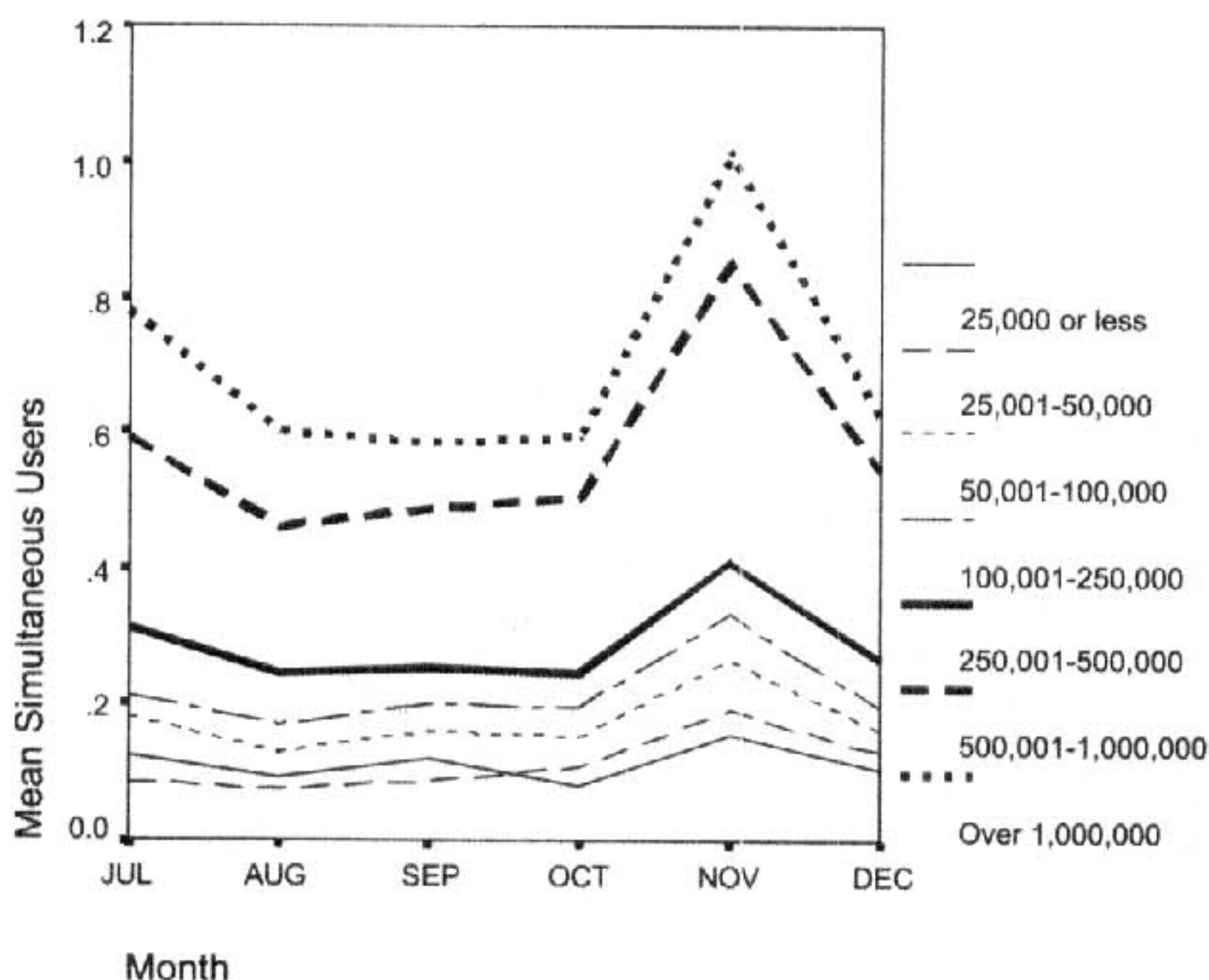


Figure 3

Average Simultaneous Use Patterns by Month, Public Libraries by Population Size

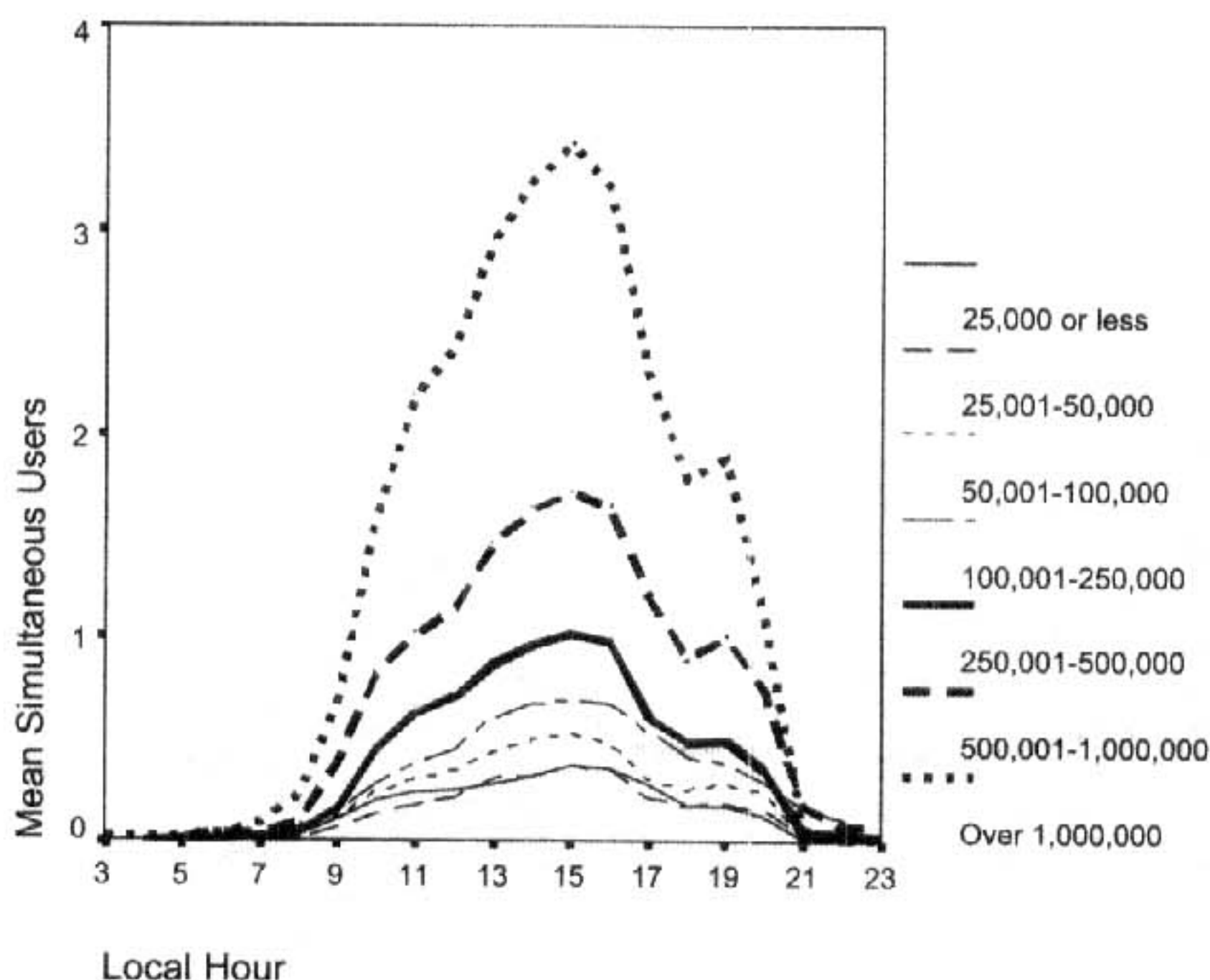


Figure 4

Average Simultaneous Use Patterns by Time of Day, General Periodicals and Magazines, Public Libraries by Population Size

popular with library users. The largest number of libraries (86 percent) reported that the databases for which usage data were gathered are the most popular databases. An additional 10 percent reported that these databases rank second in popularity. Some

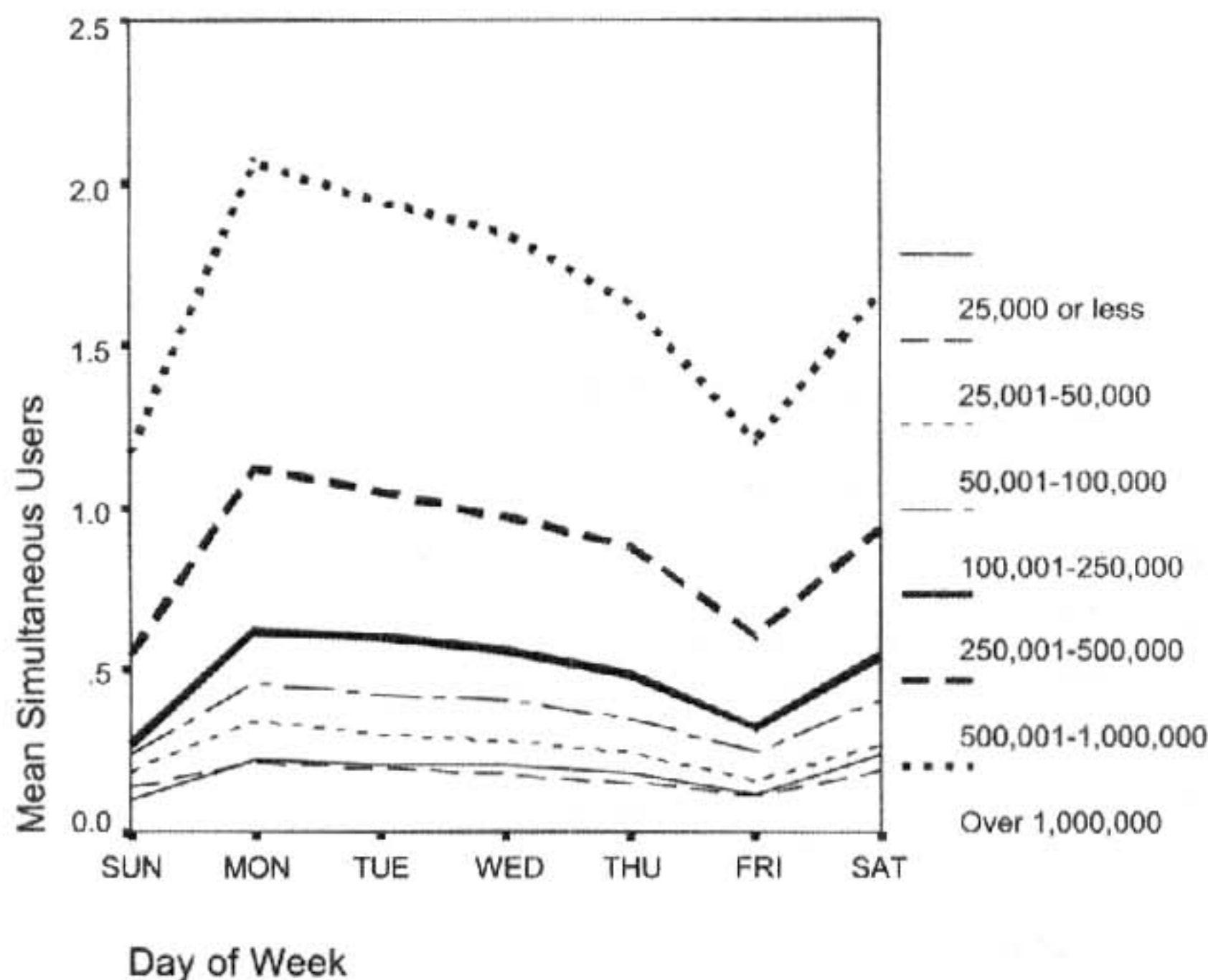


Figure 5

Average Simultaneous Use Patterns by Day of Week, General Periodicals and Magazines, Public Libraries by Population Size

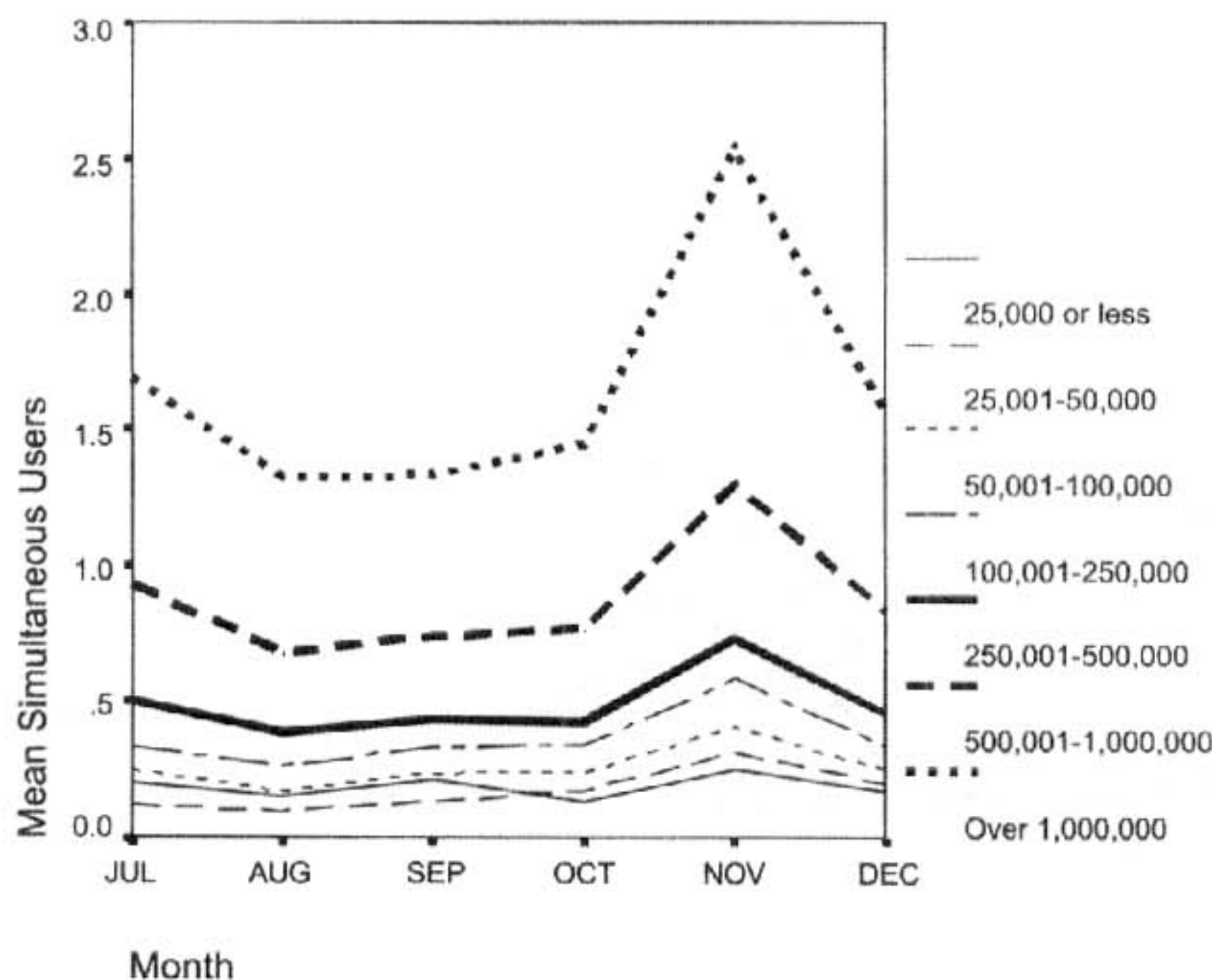


Figure 6

Average Simultaneous Use Patterns by Month, General Periodicals and Magazines, Public Libraries by Population Size

libraries actively promote one or more of these databases or deliberately make them easier to find. Of the libraries that responded to the survey, 70 percent identified these specific databases on the library system's main menu, 41 percent posted signs that pro-

mote them, 59 percent provided handouts that describe them, and 62 percent offered training that specifically mentions the company's databases (table 7). Once a user logs in or sits down at a workstation, it requires just one to three steps to reach the databases in at least 87 percent of the libraries.

Public librarians expressed many opinions about what they think causes a user to select a particular database. When respondents were asked to rate the factors that influence selection on a three-point scale of having "no influence," "some influence," or "great influence," it became clear that content is king in public librarians' minds. No public librarian rated usefulness or quality of content as having "no influence" on end users' decision-making. In fact, 88 percent of all respondents rated usefulness of content to be of great importance, and more than three-fourths said the same for quality of content (table 8).

Uniqueness is another important factor. More than 86 percent of the public librarians surveyed reported that a lack of other databases has at least some influence on database selection by end users, and nearly 82 percent reported that a lack of appropriate print resources influences database use (table 8). Uniqueness may be most important in small libraries with limited collections. Two librarians in midwestern cities of under 100,000 separately observed that, "sometimes it is because it is what they used in school or it is really up-to-date or their only option" and "people use a database because: (1) they are familiar with it; (2) the librarian suggested it; or (3) it's the only one available."

Not surprisingly, most public library respondents reported that convenience factors also influence

database selection. Factors rated as having some or great influence by 80 percent or more of the libraries include (in descending order of importance): the availability of remote login, the number of workstations, and the number of hours the library is open.

Fewer librarians (65 percent) indicated that location of workstations has an influence on use. Approximately half reported that the pricing option is of no importance (table 8).

In addition to the factors they were asked to rate, the librarians speculated on why they think a person selects and uses a particular database. Many factors were mentioned, but almost every respondent mentioned "ease of use." What constitutes ease of use may vary for different patrons, but it includes such factors as "simplicity of keyword searching," a clear and intuitive interface, easy navigation, and obvious printing and e-mailing. Ease of use may grow with familiarity. As one librarian explains, "in a public library, familiarity is also important; the public doesn't like new things thrown at them constantly and they don't like to constantly learn new searching." Another cites the importance of "custom/habit (what a patron has had success with before)."

Although database use is undoubtedly influenced somewhat by library policies, only one of these factors proved to be statistically correlated to amount of use. To take into account the size of the user population in statistical testing, a variable for average use per million population was created. As these new data were not normally distributed, the nonparametric Mann-Whitney and Kruskal-Wallis tests were employed to test for effects on usage. The independent variables tested were (1) the availability of remote login; (2) the number of workstations provided; (3) notation of the aggregator's databases on the main menu; (4) the number of steps required to reach the databases; (5) posting of signs; (6) availability of handouts; (7) the percentage of workstations that allowed the company's databases to be searched; (8) specific mention of the databases in training; (9) restriction of use to hours the library was open; and (10) the number of workstations dedicated to the databases. Only the

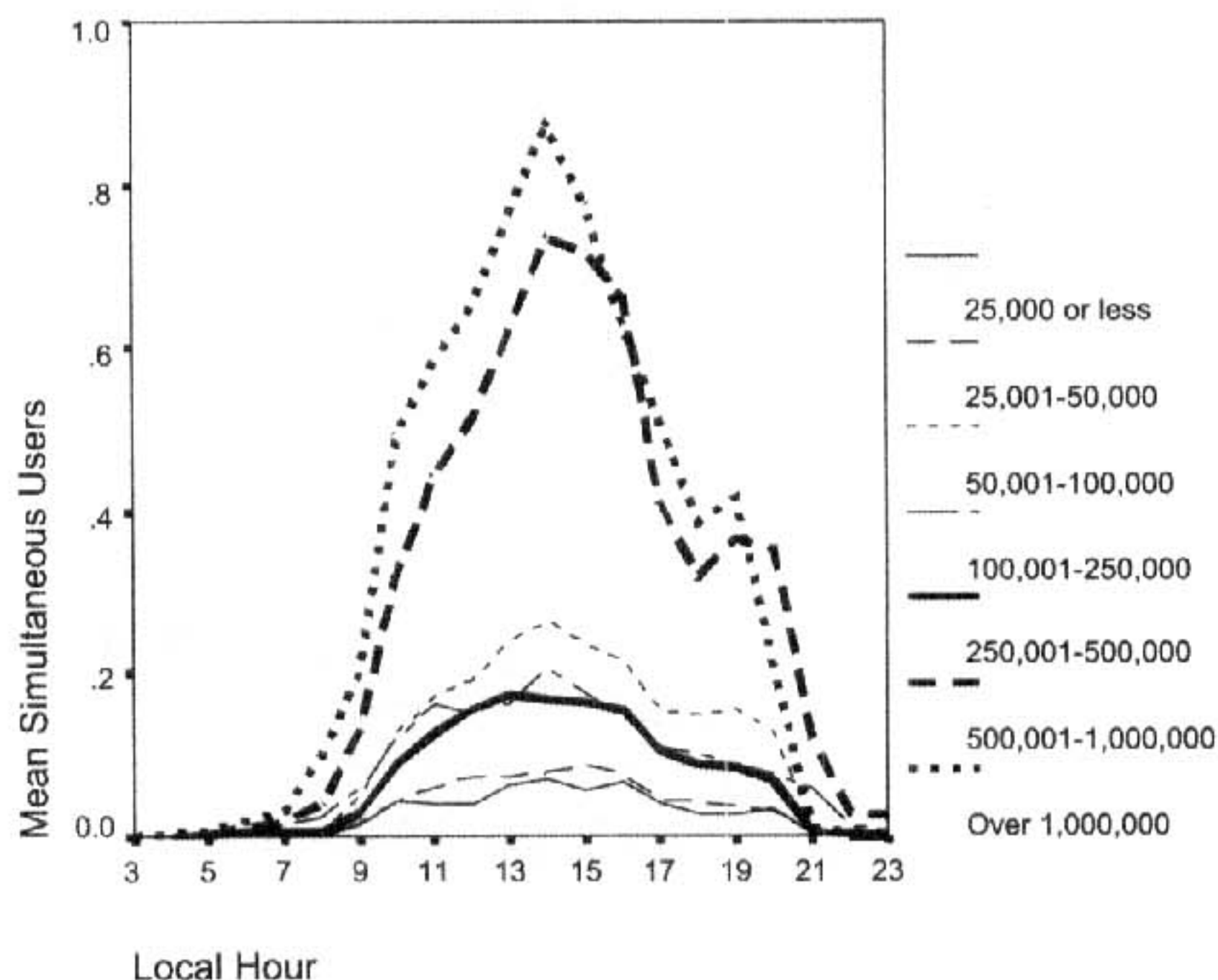


Figure 7

Average Simultaneous Use Patterns by Time of Day, Business Directories and Periodicals, Public Libraries by Population Size

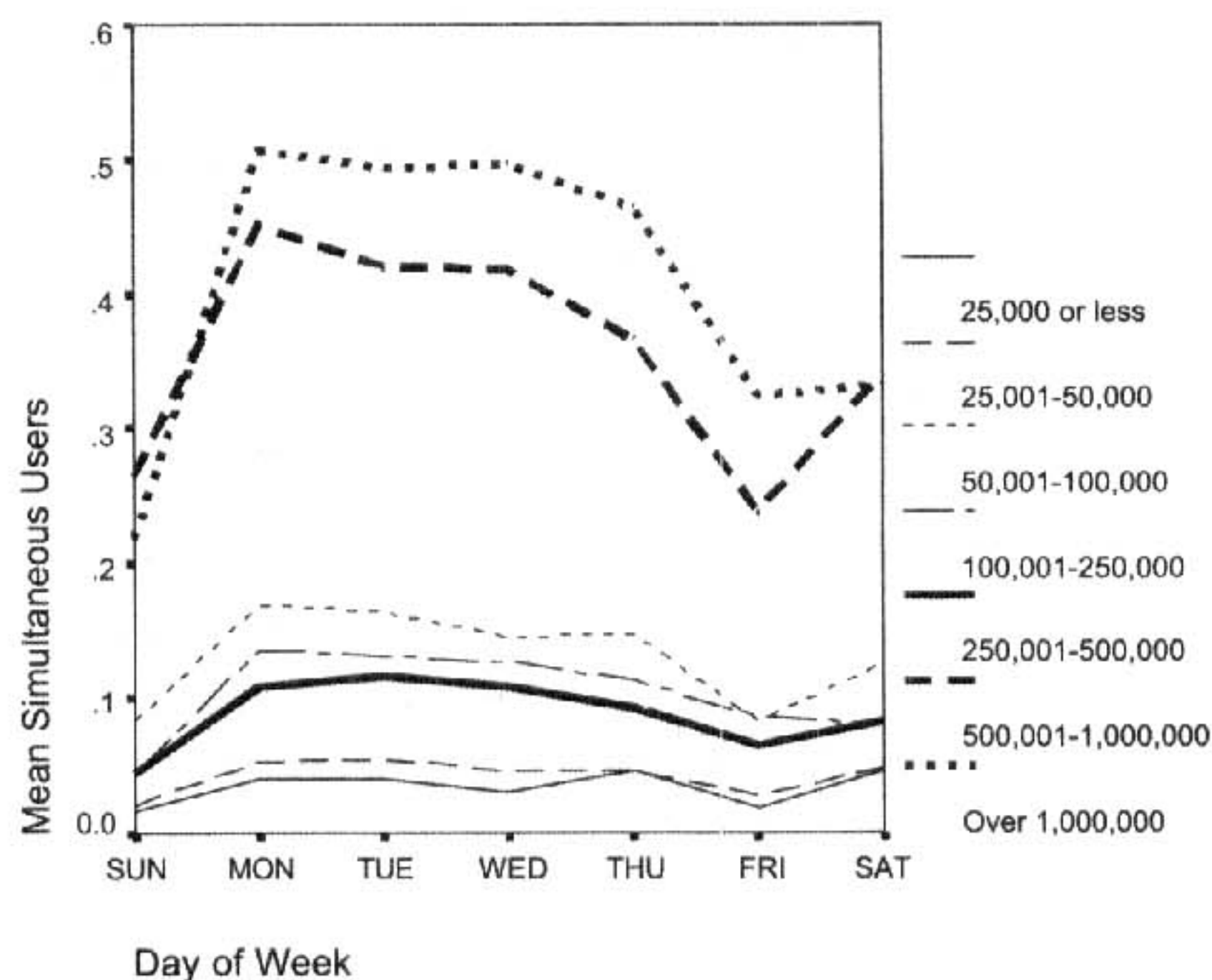


Figure 8

Average Simultaneous Use Patterns by Day of Week, Business Directories and Periodicals, Public Libraries by Population Size

total number of workstations was positively correlated with the amount of use at a statistically significant level ($p=.006$). Although not surprising, this result shows that libraries can increase the volume of use of databases by providing additional workstations.

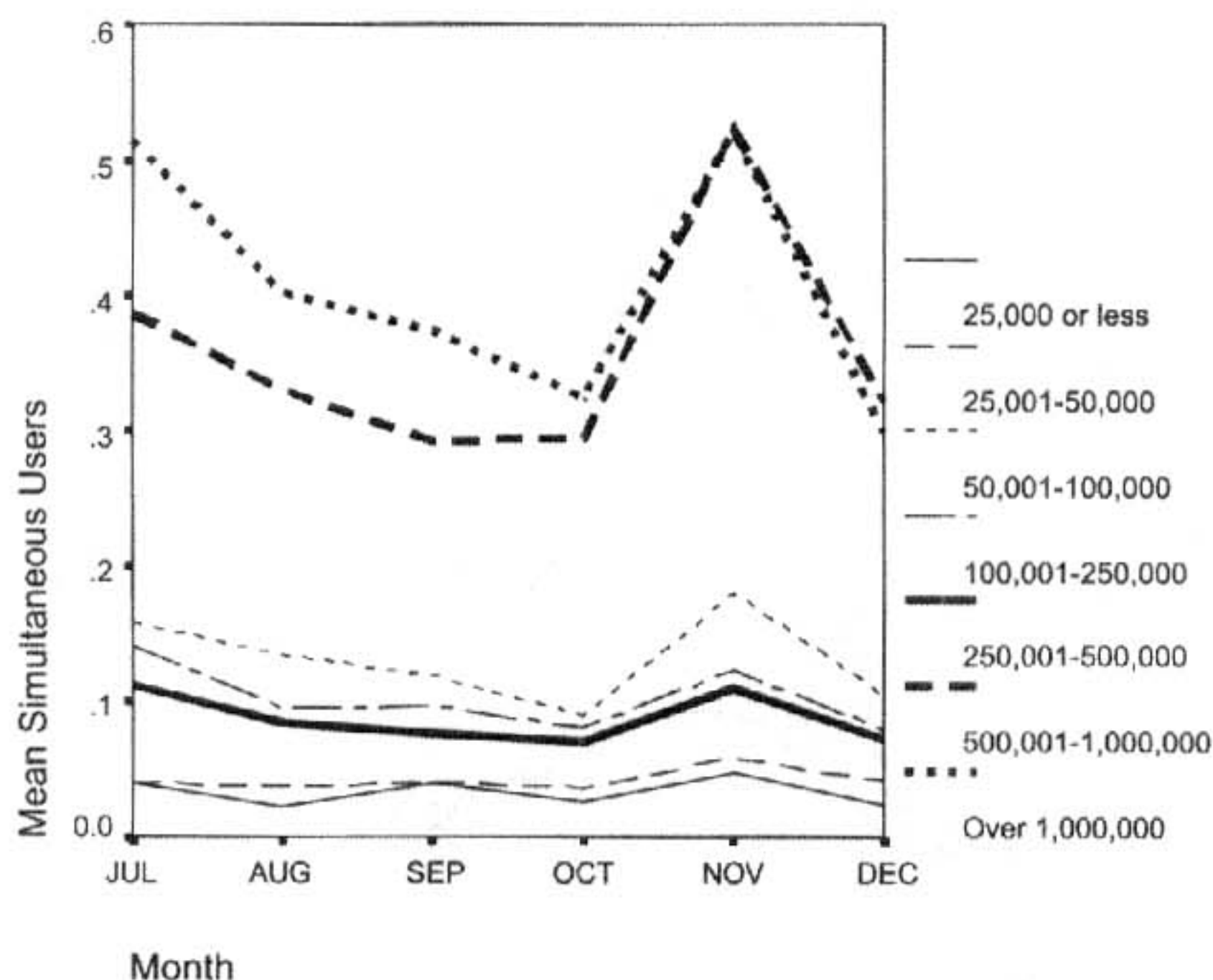


Figure 9

Average Simultaneous Use Patterns by Month, Business Directories and Periodicals, Public Libraries by Population Size

Conclusions

Much like use of the physical library building, peak online usage follows clearly defined patterns. The greatest numbers of public library users are online on Mondays and Saturdays, midday, late in the autumn.

A majority of public users are accessing databases at the time they would typically use the library building. For all types of public libraries there are valleys and peaks for online use, although usage in public libraries is somewhat more evenly distributed than use in academic libraries.

Even for general interest magazine databases that are available both in-house and through remote access, at many times no one is online. Peak usage can be quite high in some libraries, but average usage for any one database or group of similar databases is low.

Although only one of the variables tested was found to be a statistically significant predictor of amount of use, a combination of factors may influence use, many of which are difficult to measure. Librarians influence use in a variety of subtle and obvious ways, including provid-

ing handouts, posting signs about a specific database, referring to a database on a library's welcome screen, or otherwise reminding users about a specific database. Making sure that appropriate databases are available most of the time when users need them is accomplished by negotiating appropriate license agreements, providing an adequate num-

Table 2

Simultaneous Use for All Databases Aggregated (Cumulative Percentage)

No. of Users	Population Served							Overall
	25,000 or less	25,001 to 50,000	50,001 to 100,000	100,001 to 250,000	250,001 to 500,000	500,001 to 1,000,000	More than 1,000,000	
1	97.6	97.5	95.7	94.9	93.1	89.0	85.5	93.6
2	99.0	99.0	98.2	97.6	96.4	92.7	91.1	96.5
3	99.5	99.6	99.3	98.8	98.0	94.9	94.5	97.9
4	99.7	99.8	99.7	99.3	98.9	96.2	96.2	98.7
5	99.9	99.9	99.9	99.6	99.3	97.1	97.2	99.1
6	99.9	99.9	99.9	99.8	99.6	97.7	97.8	99.3
7	99.9	99.9	99.9	99.9	99.8	98.3	98.2	99.5
8	99.9	99.9	99.9	99.9	99.9	98.6	98.6	99.6
9	99.9	99.9	99.9	99.9	99.9	99.0	98.9	99.7
10	99.9	99.9	99.9	99.9	99.9	99.2	99.1	99.8
15	—	—	99.9	99.9	99.9	99.8	99.7	99.9
25	—	—	—	—	—	99.9	99.9	99.9
Maximum Simultaneous Users (100 percent)								
	11	14	19	18	21	33	39	39

Table 3*Simultaneous Use for General Magazines and Journals (Cumulative Percentage)*

No. of Users	Population Served							Overall
	25,000 or less	25,001 to 50,000	50,001 to 100,000	100,001 to 250,000	250,001 to 500,000	500,001 to 1,000,000	More than 1,000,000	
1	95.7	95.9	93.2	91.1	88.3	86.1	75.2	90.3
2	97.8	98.2	97.0	95.2	92.6	89.0	80.4	93.9
3	98.8	99.2	98.7	97.3	95.4	91.0	84.1	95.9
4	99.3	99.6	99.4	98.5	97.2	92.6	86.7	97.1
5	99.7	99.8	99.8	99.1	98.3	94.0	89.0	97.9
6	99.8	99.9	99.9	99.5	99.0	95.2	90.9	98.4
7	99.9	99.9	99.9	99.7	99.4	96.2	92.5	98.8
8	99.9	99.9	99.9	99.8	99.6	97.0	93.9	99.1
9	99.9	99.9	99.9	99.9	99.8	97.7	95.2	99.3
10	99.9	99.9	99.9	99.9	99.9	98.2	96.1	99.5
15	—	—	99.9	99.9	99.9	99.5	98.7	99.9
25	—	—	—	—	—	99.9	99.8	99.9
Maximum Simultaneous Users (100 percent)								
	11	14	18	18	21	33	39	39

ber of workstations, and letting library users know about what databases are available.

The results of this study suggest that librarians believe that public library users select relevant content that is convenient and easy-to-use. Perhaps it is optimistic on the part of librarians to rate quality of content as the most influential reason that public library users select a database. It would be interesting to ask users what actually influences their choice. ■

Acknowledgments

The authors would like to thank Danielle M. Green, Cari Springer, George Banks, and Leslie Preston, who were all involved in the project at its early stages. Shawn Collins, Technology Coordinator at the School of Information Sciences, University of Tennessee, has offered expert support throughout.

Table 4*Simultaneous Use for Business Directories and Periodicals (Cumulative Percentage)*

No. of Users	Population Served							Overall
	25,000 or less	25,001 to 50,000	50,001 to 100,000	100,001 to 250,000	250,001 to 500,000	500,001 to 1,000,000	More than 1,000,000	
1	99.6	99.3	96.7	97.8	98.2	90.7	88.8	96.4
2	99.9	99.9	98.7	99.4	99.6	95.0	93.7	98.4
3	100.0	99.9	99.5	99.8	99.9	97.3	97.2	99.3
4	—	99.9	99.8	99.9	99.9	98.7	98.8	99.7
5	—	100.0	99.9	99.9	99.9	99.3	99.5	99.9
6	—	—	99.9	99.9	100.0	99.7	99.8	99.9
7	—	—	99.9	99.9	—	99.9	99.9	99.9
8	—	—	99.9	99.9	—	99.9	99.9	99.9
9	—	—	99.9	99.9	—	99.9	99.9	99.9
10	—	—	99.9	99.9	—	99.9	99.9	99.9
15	—	—	99.9	—	—	—	—	99.9
Maximum Simultaneous Users (100 percent)								
	3	5	19	12	6	12	11	19

Table 5
Simultaneous Use for Health Information (Cumulative Percentage)

No. of Users	Population Served							Overall
	25,000 or less	25,001 to 50,000	50,001 to 100,000	100,001 to 250,000	250,001 to 500,000	500,001 to 1,000,000	More than 1,000,000	
1	98.5	98.5	97.7	96.7	94.8	88.0	86.7	94.6
2	99.8	99.7	99.5	99.1	98.4	94.0	93.8	97.9
3	99.9	99.9	99.9	99.7	99.5	97.1	97.5	99.2
4	99.9	99.9	99.9	99.9	99.9	98.6	99.1	99.7
5	99.9	100.0	99.9	99.9	99.9	99.4	99.7	99.9
6	100.0	—	99.9	99.9	99.9	99.7	99.9	99.9
7	—	—	100.0	99.9	99.9	99.9	99.9	99.9
8	—	—	—	100.0	99.9	99.9	99.9	99.9
9	—	—	—	—	100.0	99.9	99.9	99.9
10	—	—	—	—	—	99.9	100.0	99.9
11	—	—	—	—	—	99.9	—	99.9
12	—	—	—	—	—	100.0	—	100.0
Maximum Simultaneous Users (100 percent)								
	6	5	7	8	9	12	10	12

Table 6
Number of Simultaneous Users Needed for 99 Percent Coverage of Demand

Population Served	Aggregate (37 databases)	General Periodical Group (11 databases)	Business Group (9 databases)	Health Group (3 databases)
25,000 or less	3	4	1	2
25,001 to 50,000	2	3	1	2
50,001 to 100,000	3	4	3	2
100,001 to 250,000	4	5	2	2
250,001 to 500,000	5	7	2	3
500,001 to 1,000,000	10	12	5	5
More than 1,000,000	10	17	5	4

Table 7
Database Environments in Public Libraries (Percentage)

Situational Factors	Population Served							Overall
	25,000 or less	25,001 to 50,000	50,001 to 100,000	100,001 to 250,000	250,001 to 500,000	500,001 to 1,000,000	More than 1,000,000	
Remote access	57.1	71.4	66.7	83.3	60.0	75.0	66.7	69.5
Workstations dedicated to these databases	14.3	14.3	16.7	7.7	50.0	37.5	0.0	21.7
Databases noted on library system's main menu	57.1	71.4	63.6	76.9	70.0	62.5	100.0	69.5
Signs posted	71.4	14.3	33.3	33.3	30.0	62.5	66.7	40.7
Handouts available	71.4	33.3	58.3	58.3	60.0	62.5	66.7	58.6
Databases mentioned specifically in training	57.1	42.9	83.3	53.8	50.0	62.5	100.0	61.7
Used by students for class assignments	100.0	100.0	100.0	92.3	90.0	85.7	100.0	94.9

Table 8*Factors Thought to Influence Database Use: Librarians' Opinions (Percentage)*

Factor	Amount of Influence		
	None	Some	Great
Number of workstations	15.0	36.7	48.3
Location of workstations	35.0	50.0	15.0
Number of hours library is open	18.3	45.0	36.7
Availability of remote login	8.6	56.9	34.5
Usefulness of database content	0.0	11.7	88.3
Quality of database content	0.0	23.3	76.7
Lack of other databases in the library	13.3	48.3	38.3
Lack of equivalent print resources	18.3	41.7	40.0
Pricing option for a database	49.2	27.1	23.7

References and Notes

1. John E. Tolle et al., "Determining the Required Number of Online Catalog Terminals," *Information Technology and Libraries* 2 (Sept. 1983): 261-65.
2. Marjorie E. Murfin, "National Reference Measurement: What Can It Tell Us about Staffing," *College & Research Libraries* 44 (Sept. 1983): 321-33; William E. McGrath, "Periodicity in Academic Library Circulation: A Spectral Analysis," *Journal of the American Society for Information Science* 47 (Feb. 1996): 136-45.
3. Thomas A. Lucas, "Time Patterns in Remote OPAC Use," *College & Research Libraries* 54 (Sept. 1993): 439-45.
4. Thomas A. Peters, "Remotely Familiar: Using Computerized Monitoring to Study Remote Use," *Library Trends* 47, no. 1 (Summer 1998): 7-20.
5. Charles T. Townley and Leigh Murray, "Use-Based Criteria for Selecting and Retaining Electronic Information: A Case Study," *Information Technology and Libraries* 18 (Mar. 1999): 32-39.
6. Carol Tenopir and Lisa Ennis, "The Digital Reference World of Academic Librarians," *Online* 22 (July/Aug. 1998): 22-28; Carol Tenopir and Lisa Ennis, "The Impact of Digital Reference on Librarians and Library Users," *Online* 22 (Nov./Dec. 1998): 84-88.
7. Eileen Abels, "Pricing of Electronic Resources: Interviews with Three Vendors," *Journal of the American Society for Information Science* 47 (Mar. 1996): 235-46; Carol Tenopir, George Banks, and Leslie Preston, "Pricing Options for End User Products in Libraries," in *Proceedings of the 19th Annual National Online Meeting, New York, May 12-14, 1998* (Medford, N.J.: Information Today, 1998), 419-32.
8. Carol Tenopir and Danielle Green, "Patterns of Use and Usage Factors for Online Databases in Academic and Public Libraries," in *Proceedings of the 62nd Annual Meeting of the American Society for Information Science, Washington, D.C., October 31-November 4, 1999* (Medford, N.J.: Information Today, 1999), 616-27; Carol Tenopir and Danielle M. Green, "Simultaneous Usage of Online Databases in Academic and Public Libraries," in *Proceedings of the 20th Annual National Online Meeting, New York, May 18-20, 1999* (Medford, N.J.: Information Today, 1999), 459-68; Carol Tenopir and Eleanor Read, "Patterns of Database Use in Academic Libraries," *College & Research Libraries* 61 (May 2000): in press; Carol Tenopir, "Influencing Database Use In Public Libraries," *Library Journal* 124 (June 1, 1999): 40, 42.

Appendix

Database Use Questionnaire

Information about Your Library

1. What is your user population?

☐ under 25,000	☐ 250,000-500,000
☐ 26,000-50,000	☐ 500,000-1,000,000
☐ 51,000-100,000	☐ over 1,000,000
☐ 100,000-250,000	

2. How many branches are there in your library system?

☐ 1 only	☐ 11-20
☐ 2-5	☐ over 20
☐ 6-10	
3. How many full time librarians do you have (total for all branches)?

☐ under 10	☐ 41-70	☐ over 100
☐ 11-40	☐ 71-100	
4. How many individuals work in reference (total for all branches)?

☐ 1-9	☐ 20-29	☐ 40-49
☐ 10-19	☐ 30-39	☐ over 50
5. What is your total annual materials budget?

☐ under \$500,000
☐ \$501,000-\$1,000,000
☐ \$1,000,000-\$2,000,000
☐ \$2,000,000-\$3,000,000
☐ over \$3,000,000
6. What is your annual periodicals budget?

☐ under \$100,000
☐ \$101,000-\$200,000
☐ \$201,000-\$500,000
☐ \$501,000-\$1,000,000
☐ over \$1,000,000

Information about the Databases You Provide

1. What types of electronic media do you offer for end-user searching? (please check all that apply)

☐ CD-ROM
☐ online databases loaded locally on your computer
☐ online databases loaded on another library's computer (such as through a consortium)
☐ online databases from a commercial online service (such as FirstSearch)
☐ online databases loaded by your library catalog company (such as DRA)
☐ World Wide Web (other than to Web versions of the commercial database services listed above)
2. Which commercial online services do you provide for end user searching? (please check all that apply)

☐ Dow Jones Interactive	☐ RLG Eureka
☐ Ebscohost	☐ SilverPlatter ERL
☐ IAC SearchBank	☐ STN International
☐ LEXIS-NEXIS	☐ UMI Proquest Direct
☐ OCLC FirstSearch	
☐ Others (please list) _____	
3. (Please answer if you checked more than one commercial service above.) In your opinion, which of the online services above are the most popular with the greatest number of end users in your library?

Most Popular: _____

Second Most Popular: _____

Third Most Popular: _____
4. How many workstations do you have that provide access to reference databases? (total in all branches)

☐ fewer than 10	☐ 21-30	☐ 41-50
☐ 10-20	☐ 31-40	☐ over 50

5. What current pricing options do you have for any electronic sources? (please check all that apply)
- ☐ per use (connect time, per search, output pricing)
 - ☐ flat fee (one time fee)
 - ☐ license (based on number of simultaneous users)
 - ☐ license (based on library size)
 - ☐ license (based on library type)
 - ☐ license (based on number of potential users)
 - ☐ other (please explain): _____
6. What database pricing options do you prefer?
- ☐ per use (connect time, per search, output pricing)
 - ☐ flat fee (one time fee)
 - ☐ license (based on number of simultaneous users)
 - ☐ license (based on library size)
 - ☐ license (based on library type)
 - ☐ license (based on number of potential users)
 - ☐ other (please explain): _____
7. Does your membership in a consortium affect pricing?
- ☐ yes ☐ no please explain: _____

Information about Databases from

[database company name replaced by DCN to preserve confidentiality]

1. Which DCN databases do you have?
- | | |
|--|-------------------------------------|
| ☐ Database 1 | ☐ Database 5 |
| ☐ Database 2 | ☐ Database 6 |
| ☐ Database 3 | ☐ Database 7 |
| ☐ Database 4 | ☐ Database 8 |
| ☐ Others (please list): _____ | |
2. Do you purchase the DCN databases through a consortium?
- ☐ yes, all ☐ yes, some ☐ no
3. What percentage of your public workstations allow DCN database searching?
- | | |
|---|--------------------------------------|
| ☐ less than 25 percent | ☐ 75 percent |
| ☐ 25 percent | ☐ 100 percent |
| ☐ 50 percent | |
4. Is DCN database use restricted to the hours the library is open?
- ☐ yes ☐ no
5. Are DCN databases available through remote access?
- ☐ yes ☐ no
6. Does access to DCN databases require an end user to enter a password?
- ☐ yes ☐ no
7. Are any workstations dedicated exclusively to DCN databases?
- ☐ yes ☐ no
8. Are DCN databases noted on the library system's main menu?
- ☐ yes ☐ no

9. Once a user logs in or sits down at a workstation, how many steps/screens does it take to get to DCN databases?
- ☐ only 1 ☐ 3-4 ☐ over six
- ☐ 2-3 ☐ 4-5
10. How are the DCN databases identified on the screen?
- ☐ under "DCN" ☐ by database name
- ☐ other (please explain): _____
11. Are signs posted that promote DCN databases?
- ☐ yes ☐ no
12. Are there handouts which describe DCN databases?
- ☐ yes ☐ no
13. Is training offered that specifically mentions DCN databases?
- ☐ yes ☐ no
14. Are DCN databases used by students for class assignments?
- ☐ yes ☐ no ☐ don't know

Other Factors

(please answer these questions in general, for any online databases)

1. How much influence do you think each of the following factors has on the amount a particular database is used? (Please check none, some, or great for each factor)

Factor	Amount of Influence		
# of workstations	☐ none	☐ some	☐ great
location of workstations	☐ none	☐ some	☐ great
# of hours library is open	☐ none	☐ some	☐ great
availability of remote login	☐ none	☐ some	☐ great
usefulness of database content	☐ none	☐ some	☐ great
quality of database content	☐ none	☐ some	☐ great
lack of other databases in the library	☐ none	☐ some	☐ great
lack of equivalent print resources	☐ none	☐ some	☐ great
pricing option for a database	☐ none	☐ some	☐ great

2. Do you feel that there is a need to encourage the use of online databases, or do users find them on their own? Please explain.
3. Please comment on how much emphasis is given to database searching through bibliographic instruction in your library.
4. What is your opinion of why people use a particular database or not?