

## Research Notes

### Time Patterns in Remote OPAC Use

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*Expanded hours of access and the reduction of peak system loads are often cited as advantages of remote access to online public access catalogs (OPACs). This argument is based on the assumption that remote users search OPACs when libraries are closed or when there is low internal use. The author tested this assumption by performing a transaction log analysis of the remote and internal use of the OPAC of the Research Libraries of the New York Public Library. The analysis showed that patterns of remote and internal use differed greatly. A large part of remote searching occurred when the Research Libraries were closed. Compared to internal searching, remote searching was distributed more evenly over the course of the day and the week. The study shows that remote access expands the hours of use of the catalog and has the potential to reduce peak system loads at the Research Libraries.*

**T**he literature on online public access catalogs (OPACs) cites many potential benefits of remote access to these systems.<sup>1</sup> Advocates maintain that remote access expands the hours of access to the catalog by allowing users to search it when the library is closed. They also argue that remote access distributes use over a greater period of time, thus reducing peak system loads and improving response time.<sup>2</sup> These arguments are, however, based on an assumption about user behavior. The assumption is that remote users search OPACs when libraries are closed or when there is low internal use. If, however, remote users search at the same times as internal users, the two benefits described above obviously are not being realized.

Although OPAC use studies now constitute a large literature, only two authors have examined the time patterns of remote use in any detail. One is Sally W. Kalin, who studied the remote use of Penn State's OPAC for one week in 1984. Kalin found that remote searching was heaviest between 2:30 and 5:00 p.m. She also tallied remote searches by day of the week, and found that they peaked on Wednesday, and were lowest on Saturday and Sunday. However, she did not attempt to compare patterns of remote and internal use. Moreover, remote access was not available at Penn State when the library was closed.<sup>3</sup> Thus Kalin's study does not reveal whether remote users at Penn State searched during hours of low internal use.

During an eleven-month period in 1988-89, Thomas A. Peters studied re-

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mote use of the OPAC at the University of Missouri at Kansas City. Peters found that remote use was heaviest on weekday afternoons, and that there was comparatively little use of remote access in the evenings and on weekends. He compared remote use to total system use by day of the week and found that in both cases use was highest on weekdays. Both remote use and total use were much lower on weekends. Peters did not compare remote and internal use by hour of day. As at Penn State, remote access to the OPAC at Kansas City was not available when the library was closed.<sup>4</sup>

Two other studies treat the time patterns of remote use only in passing. Bernard G. Sloan, commenting on seven years of experience with remote access to the Statewide Library Computer System (LCS) in Illinois, notes that "remote users access a system more frequently on evenings and weekends than do users of on-site public access terminals." Lynn L. Magrath reported in 1989 that most remote users in Colorado's Pikes Peak Library District searched the Maggie III OPAC between 4:00 p.m. and midnight. Neither Sloan nor Magrath attempts a fuller comparison of remote and internal use, nor do they indicate whether remote access was available when their libraries were closed.<sup>5</sup>

### RESEARCH QUESTIONS

With the partial exception of Peters's and Sloan's work, these pioneering studies of remote use do not address the following questions: How do patterns of remote and internal use compare? Do remote users search during periods of low internal use? Do they search when the library is closed?

The present study attempts to answer these questions for one institution: the Research Libraries of the New York Public Library (NYPL). NYPL is a private corporation founded in 1895 by the merger of the Astor and Lenox Libraries with the Tilden Trust. NYPL operates four Research Libraries and eighty-two Branch Libraries in Manhattan, the Bronx, and Staten Island. (Brooklyn and Queens have separate library systems.)

The Research Libraries hold thirty-eight million items in four locations: the Central Research Library in Midtown Manhattan, the New York Public Library for the Performing Arts at Lincoln Center, the Schomburg Center for Research in Black Culture in Harlem, and the Library at West 43rd Street. The Research Libraries serve 1.4 million people a year in person, 337,000 by telephone, and many others by mail. This study exclusively concerns the Research Libraries.

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In January 1992, the Research Libraries replaced an existing OPAC with an INNOPAC system. The name of the catalog, CATNYP, was retained. CATNYP contains 1.6 million catalog records dating from 1972 to the present. Two periodical indexes have also been mounted on the system. CATNYP has one hundred ports which, at the time of the study, served all four locations of the Research Libraries, remote users, and the Graduate Center of the City University of New York (CUNY). During the eight-week period of the study, the system recorded 293,549 user-keyed searches, an average of 7,527 each day that the Central Research Library was open.

Because the Research Libraries are located at the heart of a metropolitan area of eighteen million people, the process of making remote access to CATNYP available has progressed gradually. During the study period, remote access was provided through a single dial-access port. This port was available twenty-four hours a day, seven days a week. The dial-access number was released on a selective basis to librarians, students, and faculty members at three universities in New York. The dial-access number was not released to the general public, nor was its use promoted in any way.

These limitations on remote access obviously affected the outcome of this

study. If more ports had been available to remote users, and if the dial-access number had been widely disseminated and promoted, remote use undoubtedly would have been much higher. Nevertheless, the remote use that did occur showed a clear time pattern. The total number of remote searches during the eight weeks of the study was 3,891, an average of 69 per day. These remote searches constituted 1.5 percent of all public searches, and 1.3 percent of total system use.

The present study undertakes to answer the following four questions. First, did remote users search CATNYP during days when the Research Libraries were closed? Second, how did the daily patterns of remote and internal use compare? Third, did remote users search CATNYP during hours of the day when the Research Libraries were closed? Finally, how did the hourly patterns of remote and internal use compare?

#### METHODOLOGY

The research method used in the study was a transaction log analysis. Release 7 of INNOPAC compiles a detailed transaction log which is retained on the system for ten days. During the present study, the transaction log data were printed each Monday for eight weeks. The data were then transferred to Microsoft Excel version 4.0 for further compilation and analysis. The eight-week period of the study began at 11:00 a.m. on May 4, 1992, and ended at 11:00 a.m. on June 29, 1992. May and June are months of somewhat lower than average use in the Research Libraries. Still, use was substantial during the study period, and showed a clear pattern.

The INNOPAC transaction log identifies the port at which each search is entered. During the study period, each port was assigned to one of four classes of users: internal public, remote public, staff, and CUNY. Thus it was possible to separate the searches made by each of these user groups. The present study is concerned only with searches done by the internal public and the remote public. Staff and CUNY searches are not considered. During the study period there

were 259,088 internal public searches and, as mentioned above, 3,891 remote public searches.

#### FINDINGS

##### *Remote Use by Day of Week*

The first question addressed was whether remote users searched CATNYP during days when the Research Libraries were closed. During the study period, the Central Research Library, where 89 percent of all internal use of CATNYP occurred, was open from Tuesday through Saturday. Central was closed on Sunday and Monday. The New York Public Library for the Performing Arts, where 6 percent of internal use occurred, was open on Monday and from Wednesday through Saturday. Performing Arts was closed on Sunday and Tuesday. The Schomburg Center for Research in Black Culture, where 5 percent of internal use occurred, was open on Tuesday, Wednesday, Friday, and Saturday. Schomburg was closed on Sunday, Monday, and Thursday. The Library at West 43rd Street, where less than 1 percent of internal use occurred, was open from Tuesday through Saturday and closed on Sunday and Monday. Thus 94 percent of all internal searches were done in Central, Schomburg, and the Library at West 43rd Street, buildings which were closed on Sunday and Monday.

Figure 1 shows that there was substantial remote use on Sunday and Monday, when most divisions of the Research Libraries were closed. More than 12 percent of remote searches were done on Sunday, and over 14 percent on Monday. Remote searching on Sunday and Monday was only slightly below the level that would have resulted if remote searches had been evenly divided among the seven days of the week. Sunday and Monday together constitute two-sevenths, or 29 percent of the week, and 27 percent of remote searches occurred on these days. Thus it is clear that remote patrons made good use of CATNYP on days when the Research Libraries were closed.

When the daily patterns of remote and internal searching are compared, the

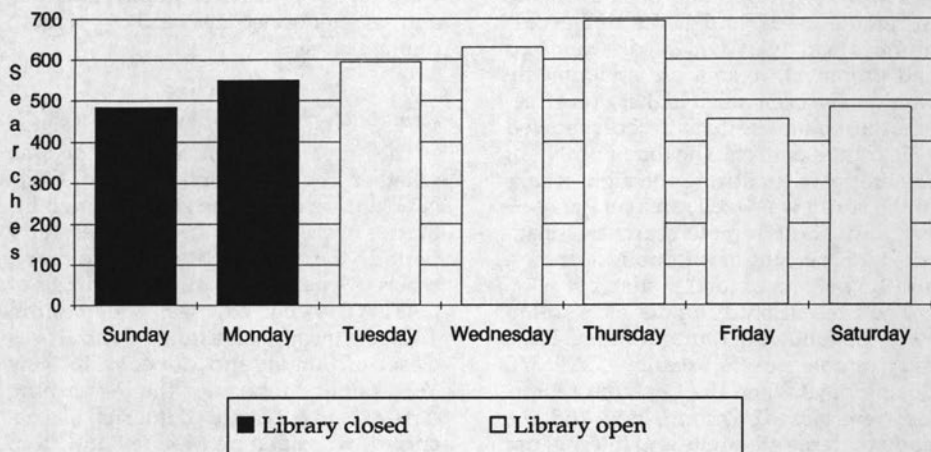


FIGURE 1  
Remote Use of CATNYP by Day of Week ( $n = 3,891$ )

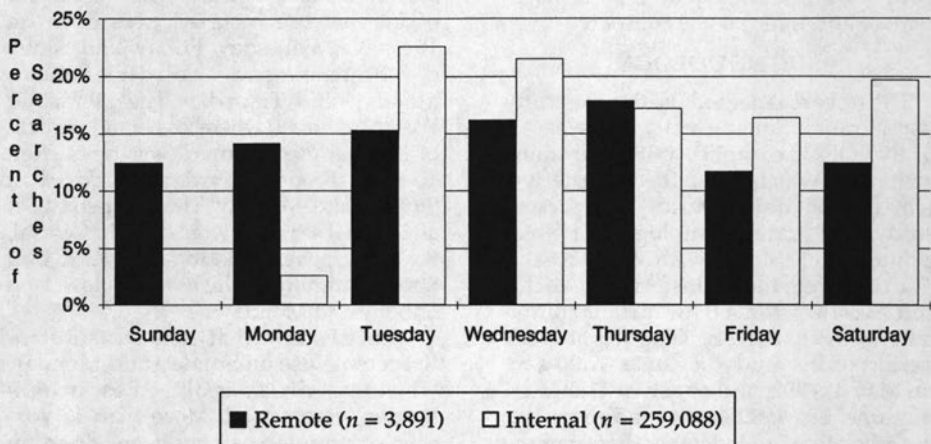


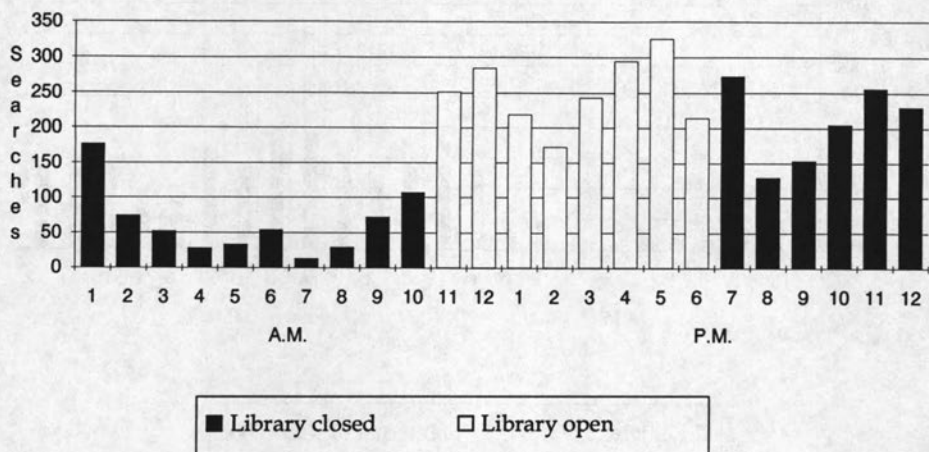
FIGURE 2  
Remote and Internal Use of CATNYP by Day of Week

differences are readily apparent (see figure 2). Internal use was concentrated, necessarily, in five days of the week, with particularly heavy use on Tuesday, Wednesday, and Saturday. Twenty-three percent of all internal searching occurred on Tuesday, and 22 percent on Wednesday. On Sunday, by contrast, there was no internal searching, and only 3 percent of internal searching occurred on Monday. (These Monday searches are mainly attributable to the

New York Public Library for the Performing Arts, the only Research Libraries location open on that day. In addition, some staff members in the Central Research Library used the public terminals on Mondays.)

Remote use, on the other hand, was distributed more evenly throughout the week. During the eight-week study period, the heaviest remote searching occurred on Thursday, with 18 percent of the total, and the lightest on Friday, with





**FIGURE 3**  
Remote Use of CATNYP by Hour of Day ( $n = 3,891$ )

12 percent of the total. A Kruskal-Wallis multiple comparison procedure was performed on the data to determine whether the differences in the number of remote searches per day were the result of chance. The procedure showed that there was no significant difference ( $p = 0.25$ ) in the number of remote searches per day.<sup>6</sup>

#### *Remote Use by Hour of Day*

The hours of the Research Libraries vary by division, but most divisions in the Central Research Library, where 89 percent of all internal use of CATNYP occurred, have similar hours. During the study period, most divisions in Central were open from 11:00 a.m. to 7:30 p.m. on Tuesday, from 11:00 a.m. to 6:00 or 7:30 p.m. on Wednesday (depending on the division), and from 10:00 a.m. to 6:00 p.m. on Thursday through Saturday. The New York Public Library for the Performing Arts, where 6 percent of internal use occurred, was open from noon to 8:00 p.m. on Monday and Thursday, and from noon to 6:00 p.m. on Wednesday, Friday, and Saturday. The Schomburg Center for Research in Black Culture, where 5 percent of internal use occurred, was open from noon to 8:00 p.m. on Tuesday and Wednesday, and from 10:00

a.m. to 6:00 p.m. on Friday and Saturday. The Library at West 43rd Street, where less than 1 percent of internal use occurred, was open from 9:00 a.m. to 5:00 p.m. on Tuesday through Saturday. Thus, in the Central Research Library, where most internal use occurred, CATNYP was available about eight hours a day, five days a week. Remote access, by contrast, was available twenty-four hours a day, seven days a week.

Figure 3 reveals that remote users did a large part of their searching during hours when the Central Research Library was closed. Fully 48 percent of remote searches occurred either before 10:00 a.m. or after 6:00 p.m.—hours when the Central Research Library was usually closed. (In figure 3, the usual schedule for the Central Research Library was used to show the hours when the Research Libraries were open.) Figure 3 shows that there were three major peaks in remote searching during the day: the first in late morning, the second in late afternoon, and the third in late evening. The intervening valleys correspond to mealtimes. (Lunch and dinner are generally eaten later in New York than in other parts of the country.) Remote searching declined to a low level after 1:00 a.m., but there was some

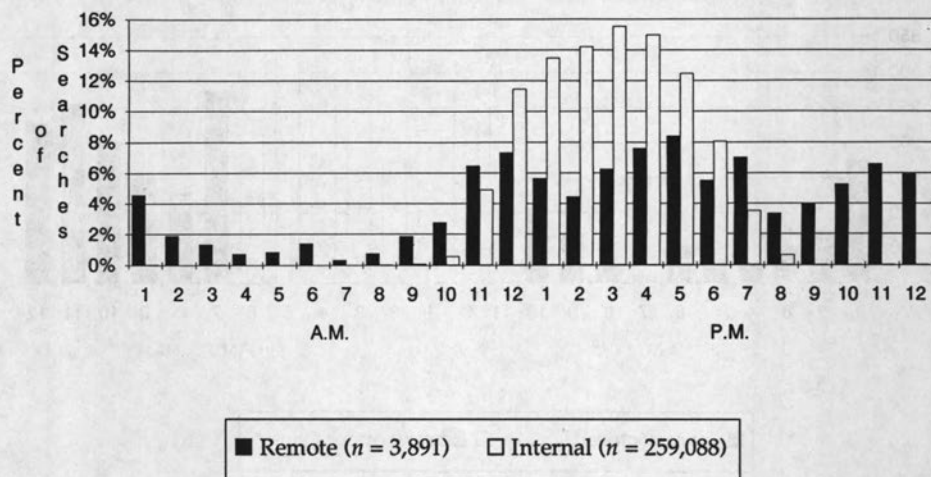


FIGURE 4  
Remote and Internal Use of CATNYP by Hour of Day

searching throughout the night. The remote users confirmed New York's reputation as the city that never sleeps.

Figure 4 shows that the hourly patterns of remote and internal use differed greatly. Internal searches were bunched together, with 82 percent occurring during the six-hour period from 11:00 a.m. to 5:00 p.m. The heaviest hour for internal searching was from 2:00 to 3:00 p.m., when nearly 16 percent of all internal searches occurred. Remote use, by contrast, was spread more evenly throughout the day. The busiest hour for remote searching was from 4:00 to 5:00 p.m., when 8 percent of remote searches occurred.

#### DISCUSSION

It is clear that at the Research Libraries of the New York Public Library, patterns of remote and internal use of the OPAC differ greatly. Remote users do a large part of their searching during days and hours when the Research Libraries are closed. Thus the study shows that remote access expands the hours of use of the catalog. This benefit is of particular importance to a library such as NYPL, which has comparatively limited hours.

The study also shows that remote searching of CATNYP is distributed more evenly over the course of the day

and the week than internal searching. This finding suggests that if internal users could be persuaded to do some of their searching from remote locations, a reduction in peak system loads might result. On the other hand, it is possible that remote access would simply increase the total use of the system, without reducing internal use. Further studies of this issue are needed. One approach to the problem would be to examine total system use before and after remote access is introduced. Another approach would be to survey internal users, asking them whether they would do less searching in the library if remote access were available. Those users who indicated a willingness to switch to remote access might then be asked when during the day and the week they would be likely to do remote searching.

The results of such studies would be valuable to librarians who must convince their administrators and funding agencies of the benefits of remote access in these times of financial exigency. These studies would be particularly welcome at a time when community information systems and freenets are receiving increasing scrutiny.

The present study should also be replicated and extended in other types of

libraries, particularly academic libraries and libraries offering Internet access. Such studies would involve different clienteles, and would help to determine whether the results of the present study are indicative of remote use in libraries generally.

Further studies may confirm that remote access is a way of expanding access to OPACs without the expense of in-

creasing building hours. Future studies may also show that remote access is a means of spreading the load on OPACs over a greater number of hours, thus improving response time. As libraries increase the demand on their OPACs by mounting additional databases on them, these benefits of remote access can only grow in importance.

#### REFERENCES

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