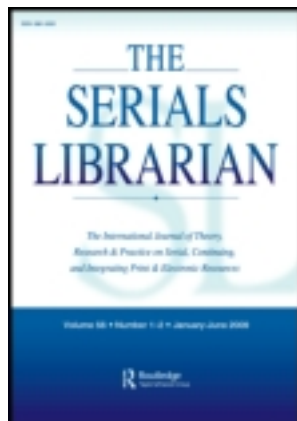


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Probing the Effects of Policy Changes by Evaluating Circulation Activity Data at Columbia University Libraries

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VOICES FROM THE FUTURE

Edited by Rick J. Block

Probing the Effects of Policy Changes by Evaluating Circulation Activity Data at Columbia University Libraries

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Circulation data sets at Columbia University Libraries were organized, analyzed, and visualized by examining types of patrons and their circulation activities. Patrons examined included: Graduate students, Undergraduate students, Officers and Faculty, and Visitors. Circulation activities are defined as: charges, renewals, holds, and recalls. Policy decisions, usage patterns, and learning curves were detected system-wide, and those concerning loan periods and borrowing permissions impacted activity immediately. The data validated common understandings of usage patterns and verified that faculty hold books longest, that overall activity has declined, and that patrons have adapted to online transactions. This article discusses academic years 2003–04 to 2009–10.

KEYWORDS *data mining, usage patterns, data-driven decisions, collection development, policy decisions, user behavior*

This article was originally written as a paper for an internship advised by Rick J. Block, spring 2010 at Long Island University.

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PROBLEM

What resources do librarians turn to when shaping library policy and procedures, for instance changing the user interface for making a **recall** or **hold**? Often a professional has a sense of the need for change coming from patron feedback and surveys. Then, after a policy or procedure has been altered, librarians gauge patrons' impressions with a follow-up survey. Surveys and other methods like them are necessarily subjective and self-reported. They give good insight into people's opinions, but often people's stated opinions do not tell the whole story. Quantitative measures of patrons' interactions with the library, on the other hand, may better reveal patrons' real behavior unclouded by subjectivity.

Staff at Columbia University Libraries (CUL) want to develop methods to assess usage of print collections during the shift to a mass digitization environment. Access to e-resources has been exploding over the past several years. Fiscal Year (FY) 09/10 was the first time that more of the CUL collections budget was spent on e-resources than print. Access to digital monographs has increased with the integration of Google Books and Hathi Trust APIs into the Online Public Access Catalog (OPAC). The intention of our project was to approach usage statistics for all hardcopy formats with empirical collection assessment methods.

PURPOSE

In June 2010 the ReCAP Coordinator at CUL initiated an internship project to organize, visualize, and analyze circulation data recorded by CUL from Ex Libris Voyager transactions. The primary goal was to explore a large set of underused data. Staff wanted a better understanding of what issues the data could and could not inform. Instead of testable hypotheses, we began with two basic questions: Is the data valid? And if so, does it display policy changes and expected usage patterns? We intended the project to produce shareable findings that could be used to inform staff, help make data-driven decisions, and pose questions for further study.

We set out to compile and organize existing system-wide circulation data. We organized our data by year and month, which has allowed us to observe changes in circulation patterns and patron behavior over time.

QUESTIONS

This study set out to explore the system-wide circulation data set extracted from Voyager. We approached the data set with basic questions: Who, What, When, Where, Why, and How? Most questions had a corresponding data category, such as: Who: Patron Group, What: CLIO location, When: Date,

Where: Happening Location, and How: Charge Type. “Why” does not correspond to data; it has been addressed by staff interpretation, analysis, and further study. From experience with off-site collection request volume, we expected to see a usage pattern in sequence with the academic calendar: larger volume during the fall and spring terms, less during winter and summer breaks. Institutional memory suggested that the different patron groups have different borrowing patterns. Faculty were expected to charge less and renew more. Activity for undergraduates was expected to be lower than for graduate students.

Policy changes related to circulation were expected to affect the data. Some policy changes were known previous to the study, and others were not. It was known that loan periods were extended for undergraduates within the previous several years. It was unknown that graduate students acting as adjunct faculty had been reclassified as Officers.

METHODOLOGY

The total user population of CUL is dynamic and difficult to assess on a continuing basis. A sample population was taken in January 2011.

Graduate Students (GRD): 25,268

Officers and Faculty (OFF): 21,643

Undergraduate Students (REG): 17,047

Visitors (VIS): 871

We regard our data set as the entire record of circulation activity for CUL (with two department exceptions). The scope is the entire population using Ex Libris Voyager for circulation to on-campus patrons. For a fuller explanation of terms and data categories, refer to the Appendix.

Certain categories of data were excluded. There are 12 active patron groups and only 4 were used in this study. These groups were selected because they represent the main user groups of CUL. The other patron groups include codes designated for staff processing (IND and MIS), alumni (UTS and BCA), affiliates (HSA), study carrels (ACO), and other (MSO and NUL). Patron group IND accounts for a large number of circulation activities but is pertinent only to internal routing and record keeping. Discharges were ignored in this study. Two Happening Locations, Borrow Direct and Technical Services, were also excluded because they do not include circulation activity from on-campus patrons.

All circulating CLIO locations are included.

Circulation data are item and location related. If a transaction involves an item that has been deleted or a location record that is not valid, it will not

show up in the data set. There is not a way to determine what percentage of our data set this accounts for. We believe it to be small.

Data from the Teachers College and Law Library are not included. Both institutions employ the Innovative Interfaces Millenium integrated library system (ILS).

Circulation activity recorded by Voyager does not represent total usage of library collections. It does not include access to electronic resources, interlibrary loan, browsing, casual reading, usage of most non-circulating collection, or subjective assessment. Nonetheless, Voyager records offer an accurate high-level estimate of the volume and variety of circulation activity in the CUL system.

RESULTS

Charges

A **charge** occurs when a patron borrows a book, responsibility transfers, and the item is logged on to the patron's account. Figure 1 shows the total volume of charges made by the four patron groups: GRD, VIS, OFF, and REG, organized by fiscal year from July 2003 to June 2010. The total number of charges made by all relevant patron groups has trended downward, declining 18.6% between FY03/04 and FY09/10.

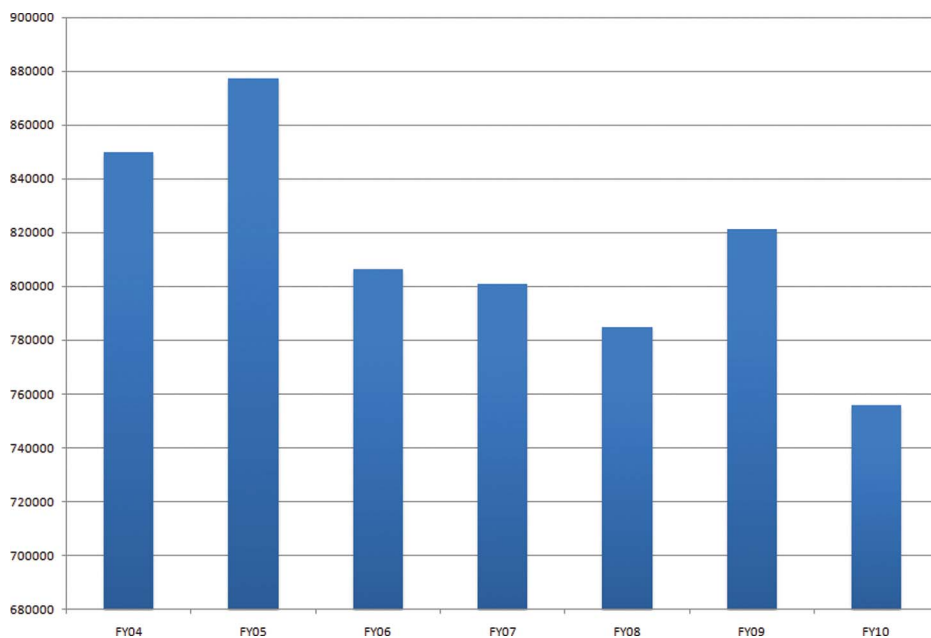


FIGURE 1 Total charges by fiscal year (color figure available online).

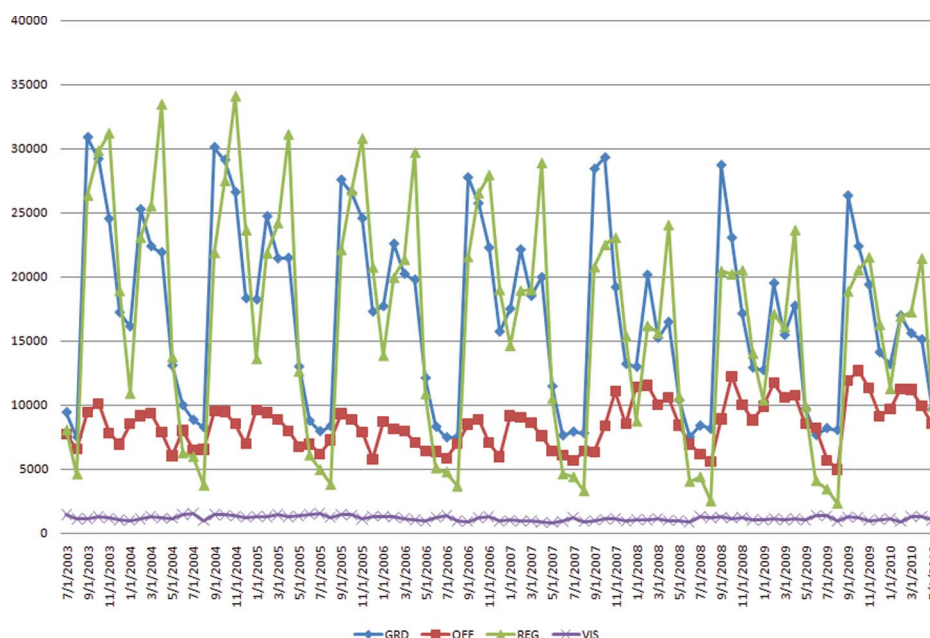


FIGURE 2 Charges by patron group by month (color figure available online).

Figure 2 makes it clear that charges are in phase with the academic calendar, except in the case of visitors. This makes intuitive sense: students and faculty at Columbia need the resources of the library for new classes every semester, but visitors have their own particular schedules. Comparing patron groups, we have these observations: broadly, the peak in graduate charges precedes the peak in undergraduate charges each year by one month. Graduates make a higher number of charges for the fall semester than they do for the spring, while Undergraduates are more even. Both Graduates and Undergraduates are generally trending down for charges, while Officers are beginning to make more.

We speculate that the trend in total charges is down primarily due to an increase in the use of e-resources. Faculty charges have increased due to more Graduates serving as adjunct faculty (with Faculty privileges). Graduates peak a month before Undergraduates because of their course requirements, which involve more written papers than tests.

Renewals

Figure 3 illustrates that **renewals** are nearly as common as **charges**. There has been a large decrease in renewals, down by 32.6% from FY03/04 to FY09/10, with the largest decrease occurring between FY05/06 and FY07/08.

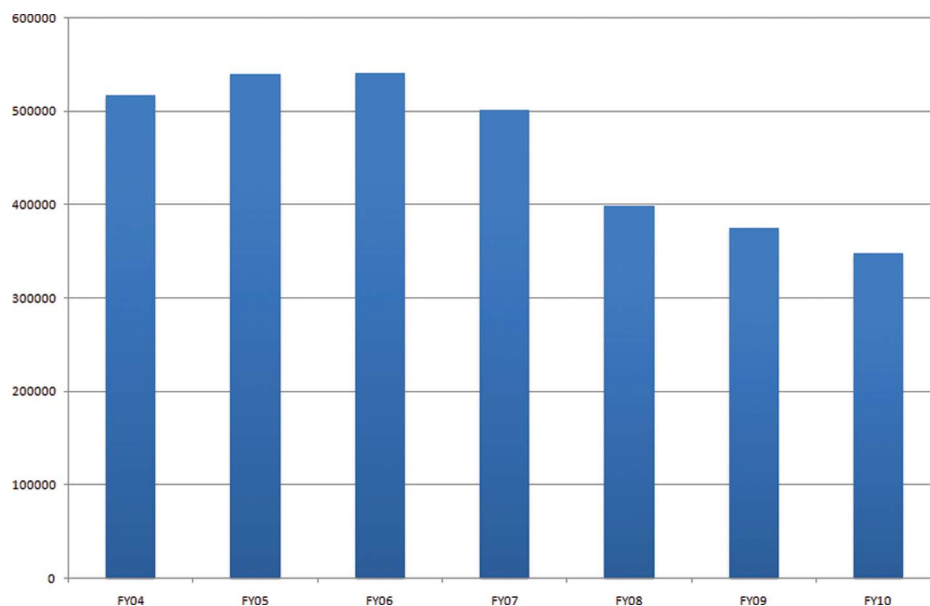


FIGURE 3 Total renewals by fiscal year (color figure available online).

According to Figure 4, renewals are generally in phase with loan period due dates. Patrons are renewing their items near the time they are due back. Over the course of the data in our study, there is a large decrease in renewals by Undergraduates (67.1%). Data shows a significant decrease for Graduates as well (26.2%). In FY03/04 Officers were about equal in renewals to Undergraduates, but are much higher in FY09/10. Graduates made the most renewals in FY03/04; Officers made the most in FY09/10. Most fascinating: Undergraduates' renewal phases change drastically after January 2008.

It seems likely that Undergraduates' renewal phases were altered by a policy change. That patron group's loan period was changed from four weeks to an entire term in January 2008, putting their loan privileges more in line with other patron groups. This may also account for the fact that Undergraduates renew far less often than other groups: their loan period is for a full semester, the typical duration of a single course, rendering it unnecessary for the average student to renew their course materials.

Holds

Holds occur in the lowest volume of all four charge types. The largest change year-to-year occurred between FY03/04 and FY04/05, with a large increase. Just before this period, in July 2003, CUL implemented Voyager, which allowed patrons to initiate renewals, recalls, and holds for the first

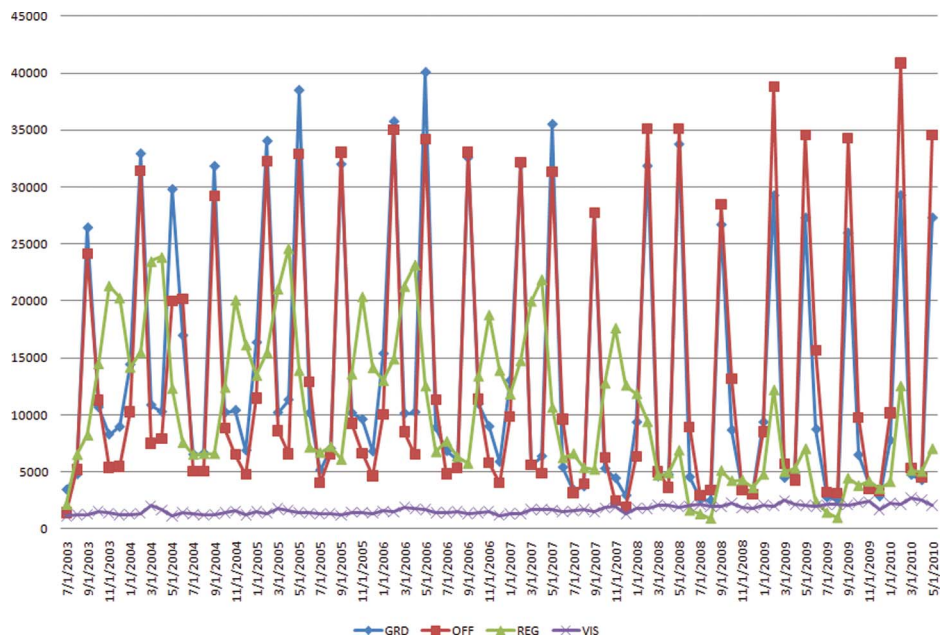


FIGURE 4 Renewals by patron group by month (color figure available online).

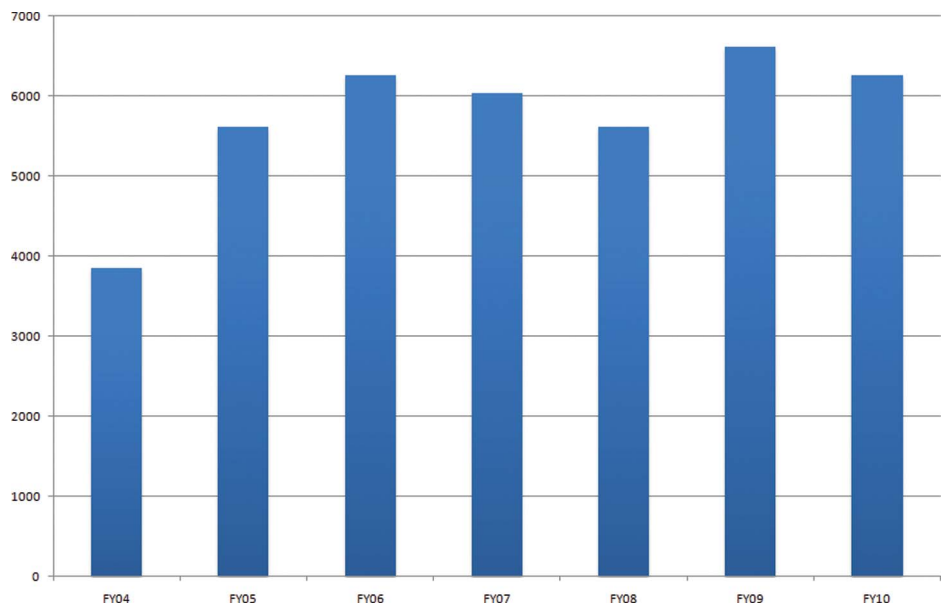


FIGURE 5 Total holds by fiscal year (color figure available online).

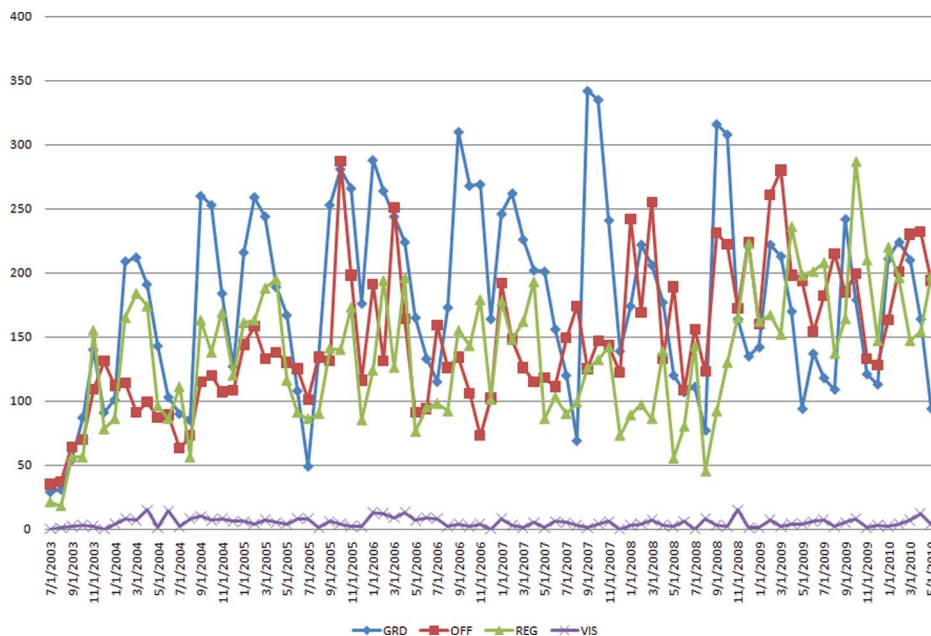


FIGURE 6 Holds by patron group by month (color figure available online).

time. After FY05/06 the volume of holds declined, only to rebound in FY08/09. Figure 5 shows the total number of **holds** made each year.

Our data for holds is more erratic than for other charge types, both year-to-year and on a monthly scale (Figure 6), though it does appear vaguely in sync with the academic calendar. Graduates increased their rate of holds until 2007, but thereafter we see a sharp decrease. Undergraduates begin to make holds at a higher rate in mid-2008, which may be because CUL began allowing undergraduates longer loan periods around the same time. Holds made by officers and faculty spiked in FY05/06. Holds made by visitors are minimal.

Recalls

Recalls have been steady, but seem to have experienced two separate phases. Looking at Figure 7, the first occurred between FY03/04 and FY05/06, when the number of recalls stayed close to 6,000 yearly. Then, in FY06/07, recalls increased dramatically, to more than 10,000 per year, and now appear to be slowly increasing.

We have found recalls to occur in a regular pattern in sync with the academic calendar (Figure 8). Graduates began to initiate more recalls starting in FY05/06. Officers did the same in FY06/07, because graduate students

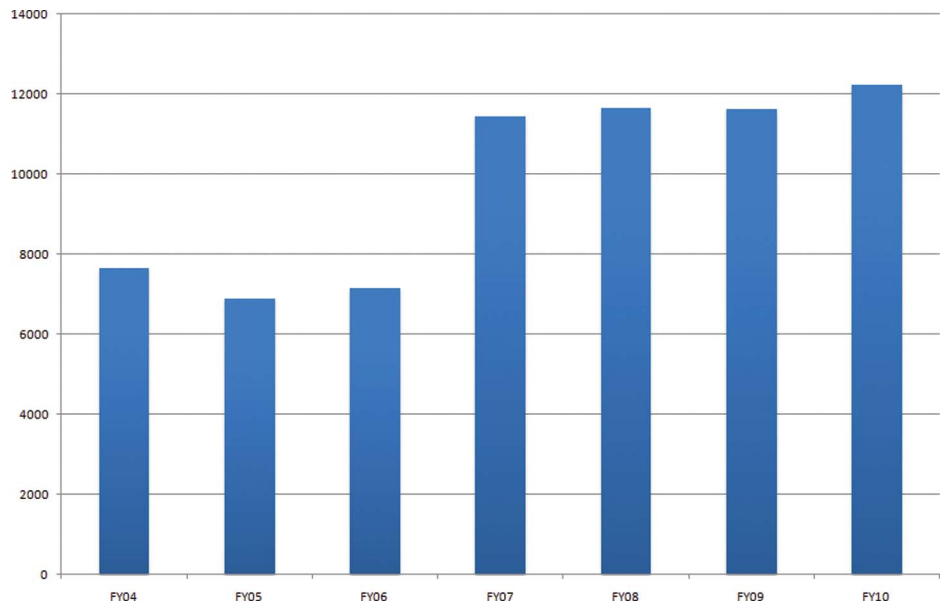


FIGURE 7 Total recalls by fiscal year (color figure available online).

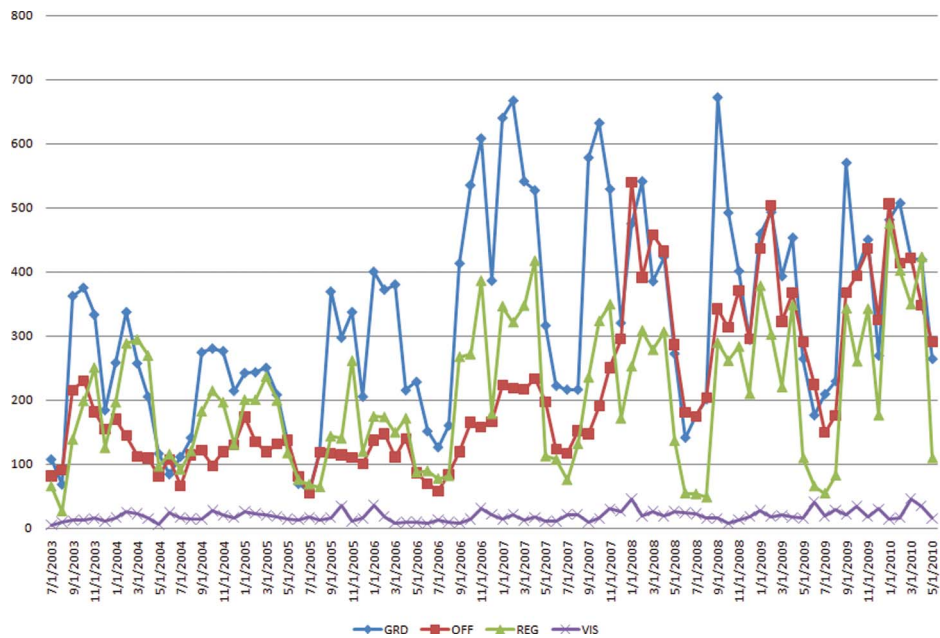


FIGURE 8 Recalls by patron group by month (color figure available online).

with teaching jobs were reclassified as Officers. While graduates have made the most recalls to date, Officers are catching up.

CONCLUSION

Do circulation policy changes affect the interactions patrons have with the library? It is impossible to say with certainty whether a policy change has directly affected the aggregate behavior of the patrons of Columbia University Libraries; the nature of correlation forbids it. We feel comfortable, however, claiming that changes in behavior patterns do appear in the data. Consider, for instance, that undergraduates' loan period was changed from four weeks to an entire term in January 2008. Thereafter CUL saw a precipitous decline in renewals by undergraduates, as displayed in Figure 4. From this same example, we speculate that policies have cascade effects. In this case, a change in loan period was made to accommodate the class length of undergraduates, allowing them to keep their items for the duration of a class. That may have had a small but deleterious effect on the other patron groups' circulation activity. Perhaps increased loan periods for undergraduates made resources more difficult to procure by others, leading to an increase in both recalls and holds.

Effects of several other policy changes stand out just as starkly in our data: in summer 2007, graduate adjunct faculty were re-classed as Officers. A subtle change in how the Libraries classified patron accounts resulted in the appearance of a user trend. This is a case where library policy affected the distribution of data but likely had no radical effect on user behavior since generally the loan privileges for Graduates and Officers are identical.

Columbia's collections reside in 22 separate libraries. Our study tracked a population of 64,829 students, faculty, and staff. Each patron behaves differently, requires a different set of resources and has different reasons for using the library. So, patrons are divided into categories depending on their relationship to Columbia University. By compiling and analyzing interactions with the library made by each patron group, we can discern our patrons' needs as they change. The techniques we used to visualize analysis of system-wide patterns can be applied to department libraries.

Our dataset does not, however, include everything we might want to study. We cannot, as yet, analyze many aspects of Columbia's collection. Do different patron groups tend to require different formats (monographs vs. serials)? Are there patterns in choice of language of materials? Do different patron groups focus on materials with varying publication dates? We would also love to explore our patrons' usage of e-resources where data is available, relevant, and workable. Circulation activity statistics alone do not give the total picture. As our experience analyzing circulation activities has

demonstrated, it is difficult to speculate about patron behavior even with careful data analysis.

Our datasets, analysis, staff presentations, and our Online Computer Library Center, Inc. (OCLC) webinar are available online at the CUL ReCAP Data Center website: <https://www1.columbia.edu/sec/cu/libraries/bts/recap/data.html#circulation>. We welcome any feedback.

APPENDIX

Definition of Terms and Data Categories

Circulation data for CUL covers a wide range of users, collections, and behaviors. Each of these correspond, sometimes imperfectly, to data encoding. The terminology used at CUL is specific to Ex Libris Voyager. In one case, it is specific to the OPAC, CLIO.

Happening Location: The physical (or virtual) location of a patron's interaction with the library. This is where circulation activity takes place.

CLIO Location: The particular location of a physical resource, expressed as a collection or sub-library.

Patron Group: The classification of a patron determined by his/her relationship to the campus. The Patron Groups with the most constituents by far have been determined to be Graduate students (**GRD**), Undergraduate students (**REG**), Officers and Faculty (**OFF**), and Visitors (**VIS**).

Circulation Activity: There are five varieties of circulation activity: **charges** (patron borrows a book), **discharges** (patron returns a book), **renewals** (patron renews a borrowed book), **holds** (book is held after discharge from its current borrower), and **recalls** (book must be discharged from the current borrower within 14 days).

Date: With our data set we were able to determine the Fiscal Year and month of every interaction between a patron and the library.