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Using Library Swipe-Card Data to Inform Decision Making

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Abstract: Georgia State University (GSU) affiliates must swipe their campus ID cards at turnstiles in order to enter the University Library buildings. The swipe verifies the individual is a GSU affiliate and unlocks the turnstile for entry. With each swipe, data such as year in school, major, and GPA are sent to a database. The library partnered with Advanced Campus Services, (ACS), GSU's high-performance, research computing unit, to create a tool to access the data. The end product has been a valuable tool for the library, one that has been used to inform staffing and operating hours decisions, as well as produce reports for campus stakeholders.

Keywords: academic libraries, library statistics, gate counts, visitor data

Using Library Swipe-Card Data to Inform Decision Making

Background

Since spring 2002, Students, faculty and staff at Georgia State University (GSU) Library have been required to swipe their campus ID cards at turnstiles in order to enter the library buildings. The swipe verifies the individual is a GSU affiliate and unlocks the turnstile for entry. The swipe-card system is primarily a security measure; however, with each swipe of a card's magnetic stripe, data associated with the respective visitor are sent to a database.

The GSU Library's swipe-card data sat unused until a fortuitous conversation between the Assessment & Staff Development Librarian and the Director of the Student Recreation (Rec) Center. The Rec Center's users also swipe their campus ID cards to gain entry into the center. The Rec Center Director explained that he decided to capitalize on the data being collected automatically, so he partnered with Advanced Campus Services (ACS), GSU's high-performance, research computing unit. ACS built a tool to allow the Rec Center to access and query against the data. Coincidentally and at the same time, the Dean of Libraries was having a similar conversation with the Director of ACS. The Director of ACS encouraged the Dean of Libraries to consider setting up a similar system with the help of ACS.

Campus Collaboration

After a few preliminary conversations with the library, ACS was ready to start the process of building out an analytics system similar to the Rec Center's system. Meetings between the library and ACS began in January 2009 with a demonstration of the Rec Center's analytics system. Right away the library could tell that it would benefit from having access to such a tool.

Also during the first meeting, the library worked out the logistics with ACS. The library would have to request permission from the appropriate campus data stewards in order to access the swipe-card data, even though the data made available to the library would be stripped of all personally identifying details. After the library received approval to access the swipe-card data, ACS would notify the campus ID card office to begin releasing the data to ACS. (Since the data are associated with holders of campus ID cards, the data are collected by the campus ID card office.) At the same time, ACS would create a system based on the Rec Center's system for the library to use to manipulate the data. The system would pick up new data once per day, read it, and build data tables. After a few additional meetings, ACS presented a project charter to the library for approval and signatures, and the project was underway.

The system was completed in July 2009, and the ACS project leader conducted training for seven library employees in August. Currently, only the Assessment & Staff Development Librarian uses the system regularly. The nature of the system is that unless one uses it regularly, it is somewhat difficult to run reports and interpret results. Since the Assessment & Staff Development Librarian is the most frequent user, the result has been that the Assessment & Staff Development Librarian provides data on demand for other library employees.

Visit/Visitor Data in the Literature

Gate count, door count, and exit gate data are mentioned extensively in the professional literature, and the references typically relate to studies of library usage trends. Martell reported on changes in numbers of various types of library transactions between 1995-2004. He noted that while gate counts would be valuable in helping determine library usage patterns, libraries do not consistently collect and/or make these data publicly available.¹ Opperman and Jamison examined the paradox of gate counts rising while circulation figures and the in-house use of materials

decrease. The authors attributed their libraries' overall gate count increase to a number of factors, including 24x7 hours of operation, information-commons-style services, and a rise in student enrollment.² In an analysis of 16 years' worth of reference statistics, Thomsett-Scott and Reese also looked at whether there were any correlations between reference numbers, circulation figures, and gate counts.³

Authors of other studies have looked at gate counts in regard to the changing face of the physical library. Malenfant relied on gate count increases, combined with positive results from a library user survey, to conclude that Westminster College Giovale Library's transition from a traditional environment to an information commons was "completely successful."⁴ Albanese summarized that by providing everything that students want to make their research and study experiences more pleasant and efficient (i.e., the learning or information commons model), libraries have seen door counts rise. The library has become a "destination."⁵ Gayton, on the other hand, urged libraries to avoid neglecting their "communal . . . spaces that facilitate serious study," because these areas are the reason that door counts continue to rise as circulation and reference numbers fall.⁶

While there are numerous references to gate counts in the research, little has been written detailing the use of demographic information attached to entrance data. Covey reminded libraries requiring swipe-card access to their buildings that they generally have access to visitor demographics; however, she did not offer any suggestions for its use or application.⁷ Researchers from the University of Technology, Sydney Library, described implementing a swipe-card system to restrict building access, with the future plan of gathering visitor data from the system.⁸ In the absence of literature describing tools for analysis of and practical uses for

swipe-card data, particularly in informing library decisions, this paper suggests options that other libraries can consider adopting.

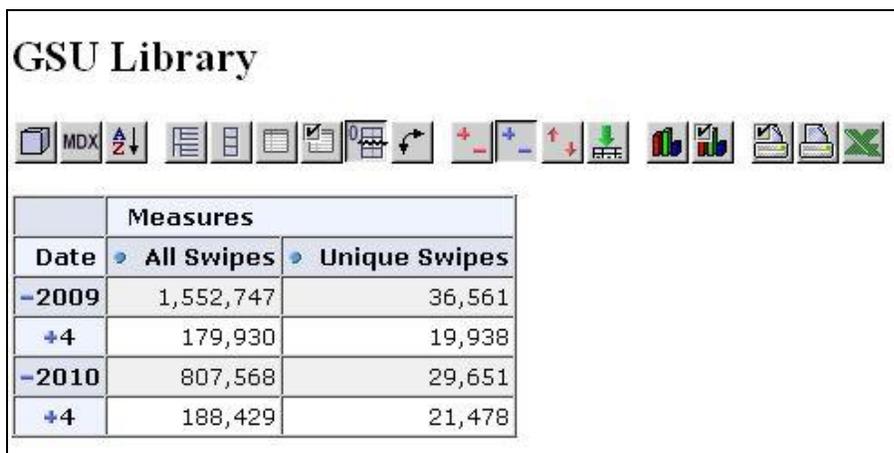
What the Swipe-Card Analytics System Provides

There are two versions of the GSU Library's swipe-card analytics system. The first relies on pivot tables in Microsoft Excel. The Excel version is a static file of information, so the ACS project leader periodically must send an updated file to the Assessment & Staff Development Librarian. The second version of the system is online and updated daily, but the most recent two days are not available. Variables that can be queried against include:

- All Swipes/Unique Swipes: "All Swipes" is a non-unique count of every entrance into the library. "Unique Swipes" is a count of unique visitors to the library.
- GPA: The average GPA of unique visitors
- Affiliation: The visitor's primary affiliation with GSU--student, faculty, or staff
- College: The six colleges on campus--the Andrew Young School of Policy Studies; Arts & Sciences; Education; Health & Human Sciences; Law; and the J. Mack Robinson College of Business
- Date: The year of the visit. The year can be drilled down to select month(s) and date(s).
- Dorm Resident: A yes/no designation of whether a visitor lives on campus
- Enrolled: Whether the visitor is currently enrolled in classes. Because historical data are available in the database, a user of the analytics system might want to filter out all visitors with a student affiliation who are not currently enrolled.
- Entry Point: Whether the visitor entered the library through Library North or Library South
- Ethnicity: The visitor's ethnic group

- Gender: The visitor's gender
- Hour, Minute: The time of the visit
- Major: The visitor's major course of study
- Month: The month of the visit
- Year in School: The visitor's class level
- Zip: The visitor's zip code

A simple report might show the total number of swipes (visits) and the number of unique swipes (visitors) for all of 2009, for the first half of 2010, for April 2009, and for April 2010 (see figure 1).



The screenshot shows a report interface for 'GSU Library'. It includes a toolbar with various icons for navigation and data manipulation. Below the toolbar is a table with the following data:

Measures		
Date	All Swipes	Unique Swipes
-2009	1,552,747	36,561
+4	179,930	19,938
-2010	807,568	29,651
+4	188,429	21,478

Figure 1. A report showing total visits and unique visitors for 2009, the first half of 2010, April 2009, and April 2010.

All of the variables can be combined, so that a user of the analytics system could, for example, generate data to find out how many unique freshmen campus residents visited the library during each month of the 2009 fall semester (see figure 2).

GSU Library

			Measures				
			Unique Swipes				
			Date				
Affiliation	YearInSchool	Dorm Resident	+8	+9	+10	+11	+12
STUDENT	Freshman	Y	1,476	2,164	1,644	1,997	1,808

Figure 2. A report showing unique freshmen campus resident visitors to the library each month during fall 2009.

Numbers from a report like that shown in figure 2 could, for example, be compared to the total number of freshmen campus residents for fall 2009, and then inform questions such as: Is the percentage of freshmen campus residents who visit the library low? High? If freshmen residents are not coming to the library to study, where are they studying? Does the library need to market to freshmen residents? Does the library need to participate in additional outreach to freshmen residents?

Conclusions and Recommendations

The swipe-card analytics system has turned out to be a worthwhile project, and the end product has been a valuable tool for the library. The Assessment & Staff Development Librarian consults the system almost daily for various data. She provides numbers to the Dean of Libraries to report to other campus stakeholders, such as the Senior Vice President for Academic Affairs and Provost and GSU's Strategic Planning Committee. Library administrators have used information from the system to inform library staffing and hours of operation decisions. The library's Creative Manager has relied on swipe-card data to inform marketing plans. The Assessment & Staff Development Librarian even has compiled data for an undergraduate student doing a study of library visitors during certain operating hours. Every month the Assessment &

Staff Development Librarian produces a swipe-card report for the library detailing visits and unique visitors, with various breakdowns, and a plan is in the works to make a public report available from the library's web site. The most exciting aspect of the project is that there is no endpoint; visitors continue to swipe in every day, and the data are collected continuously. Opperman and Jamison noted that, "[s]tatistics can show that decisions are not made in a vacuum and that library priorities respond to changes in user behavior."⁹ The GSU Library agrees wholeheartedly.

If libraries do not find it feasible to partner with other campus units to build a system such as the library visitor analytics system described here, they should make it a priority to be aware of data being produced and made available by other campus units that could be useful to the library. Through various GSU departments and offices, the library has access to student demographic data, faculty demographic data, faculty teaching loads, enrollment by college within the university, external funding awarded to academic departments, campus survey results, and more. The library has used this information, for example, to determine whether academic departments need more subject librarian support, to create student and faculty personae for marketing purposes, and to make decisions regarding a mobile web site.

As Thomsett-Scott and Reese reported, libraries should "focus on gathering statistics that can be used to improve services."¹⁰ Libraries are encouraged to seek out their campus institutional research, data warehouse, registrar, and information technology offices in order to find out what data are available, and then make a point of requesting them in an effort to support their decisions.

Notes

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9. Opperman and Jamison, "New Roles for an Academic Library," 571.
10. Thomsett-Scott and Reese, "Changes in Library Technology and Reference Desk Statistics," 151.