NCSU Special Collection Research Center
Physical Materials Usage Report

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Background

The Special Collections Research Center (SCRC) at North Carolina State University’s D. H. Hill Library holds rare book and primary resource materials that support the research and teaching needs of the university. By emphasizing established and emerging areas of excellence at the university and corresponding strengths within the Libraries’ overall collection, the SCRC strategically develops collections with the aim of becoming an indispensable source of information for generations of scholars at the university. The SCRC collecting areas concentrate broadly on the History of Science, Engineering and Technology, Natural Resources, Agriculture, Biological Sciences, North Carolina State University, Textiles, Veterinary Medicine, and Architecture and Design. The three largest bodies of materials are rare books, university archives materials, and manuscript materials.

In the summer of 2010 the SCRC and Digital Library Initiatives department initiated a data analysis project to better understand patterns in physical materials usage. The goals of the study were to better understand changes in the makeup of the SCRC patron base over time, how different groups within the patron base use different types of materials, which collections and collecting areas receive particularly high usage, and the points in the day, week and semester at which usage peaks and falls.

Research Questions

- What are general trends in materials usage over time?
- How are patrons dispersed geographically across the world, the nation, and the state?
- What is the breakdown of the patron base by patron affiliation type?
- What is the breakdown of total collections use by patron affiliation type?
- What are patterns in different patrons’ use of the three materials types?
- Are there particular collections or collecting areas that have very high use?

Executive Summary

Over the course of the three years studied, physical materials usage at the SCRC has steadily increased. Reading room opening hours over the three years were 8:00am-6:30pm Monday through Friday and 9:00am-5:00pm on Saturdays. On average, 75% of all materials are checked out between 10:00am and 3:00pm and peak checkout of physical materials occurs from 2-3:00pm (17%). Only 2.6% of material use occurs between 8:00-9:00am. When use is analyzed by day of the week, the data reveals that Saturday is the day on which the least research is conducted (9%). Peak usage days are Tuesday through Thursday. If Saturday is considered alone, almost 90% of use occurs between 10:00am-4:00pm. Only 3.4% of use on Saturday occurs during the first opening hour of 9:00-10:00am (9
people total over three years).

There are 1,556 registered patrons at the SCRC, 61% of whom are affiliated with NCSU. NCSU affiliates represent approximately 65% of total use. Undergraduates make up 28% of all patrons but represent only 17% of all use. Similarly, remote patrons comprise 13% of all patrons but represent only 1% of all use. Conversely, visiting researchers are only 8% of registered users but are responsible for nearly 25% of all use, and NCSU faculty are 6% of all patrons but perform nearly 20% of all research with collections. The amount of collections use by NCSU faculty and visiting researchers has increased substantially in the past year.

89% of registered patrons are located within the United States and only 3% are from other nations. The location of the rest is unknown. Of the patrons located within the United States, 88% are from North Carolina, meaning that about 79% of all SCRC patrons are from North Carolina. From year to year, patrons from North Carolina are responsible for 70-80% of total collections use. Patrons stem from 34 U.S. states in total. Other than North Carolina, no state has more than 12 registered patrons. Within North Carolina, patrons come from a number of different cities. A full 50% of North Carolina patrons live in Raleigh, and no other city is home to more than 3% of North Carolina patrons (though city of origin is not specified for everyone).

The group that uses rare book materials the most is NCSU undergraduates (27% of all rare book use), and NCSU faculty and staff combined represent another 36% of all rare book use. Manuscript materials are used mostly by visiting researchers, who are responsible for 48% of manuscript materials’ total use. Second to visiting researchers, NCSU faculty are responsible for 18% of manuscript material’s usage. University archives materials have the most evenly distributed use among the highest number of patron affiliation types. Visiting researchers, NCSU undergraduates, NCSU staff, NCSU graduate students, and NCSU faculty all make significant use of these materials.

Almost all of the top 50 most used collections (80%) belong to the primary collecting area of North Carolina State University. Nearly 20% of the top 50 most used collections pertained to the primary collecting areas Agriculture and Architecture respectively. Some collections belong to multiple collecting areas. No other collecting area was represented in any significant quantity in the top 50 most used collections.

**Methodology**

Data stored in the Public Services database was the source of all data analysis for physical materials usage, patrons, and patron location. The Public Services database is a Microsoft Access database built in January 2007. While some small amounts of data exist in the database for dates prior to 2007, there is no consistent data for any previous years. This report analyzes data for the three fiscal years for which data was available at the time the project was initiated: 2007/08-2009/10. For each fiscal year, dates included for analysis begin July 1st and end June 30th of the following year.
Not all records in the database are complete, for example, there is no information listed for the geographic location or the affiliation of some visitors to the SCRC reading room. Data that forms the relationships between some materials usage and patron identities in the database is incorrect, making it impossible to include in the analysis. For these and other similar reasons, small amounts of data may not be represented in one or more charts or analyses in this report.

Tables from the Public Services database were exported as text files in July 2010 and data was analyzed using PHP. Two products were produced for the SCRC: a webpage with interactive tables and charts\(^1\) and a PDF report with static charts. The tables on the interactive webpage were produced using the DataTables plugin for jQuery.\(^2\) The interactive geographic charts on the webpage were produced using Google Visualization API.\(^3\) Charts in the PDF report were produced using Adobe Illustrator CS3 and Microsoft Excel.

**Terminology**

**Affiliation type:** A local schema used in the SCRC public services database to track the main affiliation of each patron who registers with the SCRC to use materials. The first division of affiliation is whether or not the patron is associated with NCSU. If so, the database tracks whether the patron is an undergraduate student, graduate student, faculty, staff, or alumnus. If unaffiliated with NCSU, the database tracks whether the patron is a visiting researcher, a remote patron, or local community member. A patron’s affiliation is determined at the time of registration. If a patron changes roles (for example, an undergraduate becomes a graduate student or a graduate student becomes an alumnus), the affiliation type is not changed for that person. If a person has multiple affiliations (for example if someone is both an alumnus and a remote patron) the patron must choose only one affiliation to list in the database.

**Archival finding aid:** A tool that facilitates discovery of information within an archival collection and that assists users to gain access to and understand the materials.

**Fiscal year:** A 12-month period used for annual statistics reporting and financial accounting. At North Carolina State University, the fiscal year runs June-July. Calculations in this report for years are performed using the fiscal year.

**Manuscript materials:** Collections of personal or family papers.

**Material type:** There are three main material types held at the SCRC: rare books, manuscript materials, and university archives materials. See definitions of individual material types.

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\(^{1}\)Located at http://webdev.lib.ncsu.edu/joyce/SCRC/patrons.php while this report is in draft stages

\(^{2}\)See: http://www.datatables.net/

\(^{3}\)See: http://code.google.com/apis/visualization/interactive_charts.html
Rare Books: Books that are valued for the significance of their contents, their scarcity, their imprint or date of publication, or their physical characteristics or condition.

Remote patron: A patron who does not physically come to the SCRC reading room, but rather requests reproductions of materials.

University Archives materials: Collections of historical, legal, fiscal, or administrative value to the University to which they pertain (in this instance records all relate to North Carolina State University).

Use: A request for specific physical materials, including reproduction of these materials requested by remote patrons. If a researcher returns to the SCRC reading room day after day to study the same materials (not an uncommon scenario for archival researchers), each session is counted as a new “use” in the Public Services database because the patron must return the materials and check them out again the following day from the public services desk.

Data Analysis Findings

Trends in use over time

Over the course of the three years, physical materials usage at the SCRC has steadily increased, as shown in the chart below. In the past year, the rate of increase in use was three times higher than the previous year. A closer look at the trends in use over the
course of the year is shown in Figure 2. There does not appear to be a consistent trend in use over the course of the annual cycle. It also becomes apparent that while overall use has been steadily on the rise from year to year as shown above, this is not a trend that holds across from month to month across years: for example, 2007/08 saw the lowest use rates overall, but has the highest use of any year in July, August, and April. Likewise 2008/09 has the highest use rates of any year in September, October and June.

At the end of May 2009 the SCRC released a new design for online archival finding aids.\(^4\) One of the questions the SCRC was interested in examining for this study was whether or not there was any discernable increase in reading room traffic correlating to the release of the new finding aid design. Based on the available data, it is not possible to say that there was any correlation between increased use and the release of the finding aid redesign. While use does increase substantially from May to June 2009, a similar pattern was seen in 2010, and the trend in increased use does not continue steadily (use declines from June through September 2009).

Physical materials use was analyzed over the course of the average day. Figure 3 below shows the general trend in use over a 24-hour period as ratios of a whole, using data averaged over the three years studied. While the SCRC reading room is only open from 8:00am-6:30pm Monday-Friday and 9:00am-5:00pm on Saturday, small percentages of checkouts did occur before 8:00am and after 6:30pm. These may represent staff checkouts or occasions when staff arrived early and patrons were waiting.

- On average, slightly more than three-quarters of all materials have been checked out between 10:00am and 3:59pm.

\(^4\) See terminology for a definition of “archival finding aids.”
92% of all materials have been checked out between 9:00am and 4:59pm.

Only 1% of total checkouts have occurred after 6:00pm over three years, and only 5% have occurred after 5:00pm.

Regardless of the hour in which materials are checked out, they may remain in use as long as the reading room is open. In order to be sure that real use levels are not significantly higher in the 5:00-6:30pm timeframe than checkouts would indicate, checkin times were also analyzed. The results indicate that more use is occurring from 5:00-6:30 than indicated by checkouts: 4% of materials were in use and returned after 6:00pm, and 7.5% of materials were in use and returned during the hour of 5:00-5:59pm. This is of interest because the SCRC reading room was once open only until 5:00pm but hours were extended until 6:30pm to accommodate more researchers. Currently, approximately 11.5% of materials have been in use after 5:00pm.

Peak material checkouts occurs from 2-3:00pm. A second, smaller peak occurs from 10-11:00am.

Only 2.6% of materials have been checked out from 8:00-8:59am over the course of three years.

Physical materials use was also analyzed by day of the week. Figure 4 shows that only about 9% of all research takes place on the weekend (the reading room is not open on Sunday but is open on Saturday). Peak usage days are Tuesday and Thursday, and more than 60% of total usage takes place Tuesday-Thursday. An analysis of Saturday usage alone (shown in Figure 5) revealed that only 3.4% of all Saturday use occurs prior to 10:00am (9 people over three years) and nearly 8% of all Saturday use occurs from 4:00-5:00pm (20 people over three years).
SCRC physical materials use by day of the week
Averaged from fiscal years 2007/08-2009/10

Figure 4: SCRC physical materials use by day of the week

Saturday usage by hour of the day
Averaged from fiscal years 2007/08-2009/10

Figure 5: SCRC physical materials use on Saturdays
Patrons

Patron affiliation

There are 1,556 registered patrons at the SCRC. 61% are affiliated with NCSU. Figure 6 examines the breakdown of affiliation types among the NCSU affiliates.

![Bar chart showing the percentage distribution of NCSU affiliated patrons.](image)

Figure 6: NCSU affiliated patron base: percentage breakdown

The largest percentage of NCSU patrons by far is undergraduates, who account for nearly 50% of all NCSU users. Faculty and staff combined represent nearly 30% of all NCSU users. No group represents less than 10% of total registered NCSU affiliates.

Of the 39% of patrons who are not NCSU-affiliates (601 patrons), only 60% identified an affiliation type. These are shown in Figure 7 below. Of all non-NCSU affiliate users, the largest identified group is remote patrons, meaning that they request copies of materials (for example, photocopies or scans) to be made. The type of patron with the fewest registered users (NCSU-affiliated or not) are local community members.

Patron use

However, in order to answer the question, “who is using our collections?” it is more accurate to examine the quantity of use associated with patron affiliations rather than the number of registered patrons with a certain affiliation. For example, while 40 undergraduates may register with the archives because a single class requires them to perform research one time, a handful of faculty members may return again and again over the course of years. Figure 8 shows the differences by affiliation type of total use and registered users. The figure highlights a number of interesting facts. Several affiliation types

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5 A table containing more detailed information on affiliation types for NCSU affiliates is shown in appendix A.

6 A table containing more detailed information on affiliation types for non-NCSU affiliates is shown in appendix A.

7 For a definition of “use” see Terminology.
Figure 7: Non-NCSU affiliated patron base: percentage break down

Figure 8: Comparison of affiliation type as percentage of patron base and use
make up large percentages of registered users but the actual percentage of use by this group is much lower, and visa versa.

- While Undergraduates make up 27.5% of all patrons listed in the database, they represent only 17% of all use.

- Similarly, while remote patrons comprise 13% of registered patrons, they represent only 1% of all use.

- Conversely, visiting researchers are only 8% of registered users but are responsible for nearly 25% of all use.

- NCSU faculty comprises only 6% of all patrons but perform nearly 20% of all research.

- NCSU affiliates as a whole represent approximately 65% of total use.

A longitudinal analysis of collection use by patron type is shown in Figure 9.

![Figure 9: SCRC physical materials use by patron type and year](image-url)

- In terms of real numbers, the amount of use by NCSU faculty and visiting researchers has increased substantially in the past year. Use by faculty has increased steadily over the three years in which use has been tracked (with use doubling from 2007/08-2008/09 and use increasing by 60% the next year).
• NCSU graduate students used the collections over than three times more in 2008-2009 than in any other year.

• NCSU undergraduates and staff used the collections far less in 2008-2009 than they did in either of the other two years.

Patrons by geographic location
No geographic location is identified for approximately 8% of the patrons in the SCRC database. Figure 10 shows that 89% of registered patrons are from the United States and only 3% list locations in other nations. Of the patrons located within the United States, 88% are from North Carolina. This means that about 79% of all patrons are from North Carolina.

Within North Carolina, patrons stem from a number of different cities. 80% of North Carolina patrons gave information on the city in which they live. A full 50% of North Carolina patrons live in Raleigh (though these numbers are influenced greatly by students living in Raleigh during their studies). No other city surpassed 3% of North Carolina patrons.8

While it is interesting to consider the geographic origins of all patrons, many of these patrons may have only used our materials once, while others may be frequent customers.

Use by geographic location
A longitudinal analysis shows that use by geographic location matches patron base by geographic location almost exactly.

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8A table listing all cities with 10 or more patrons can be found in appendix A.
Over the past three years, between 70-80% of all use has come from North Carolina-based patrons. The percentage of total use that is by North Carolina-based patrons has increased by about 4% each year.

International patrons represent 3% of total patrons and are also responsible for approximately 2-3% of use.

Patrons in other U.S. states besides North Carolina are 8.4% of the patron base and over time have been responsible for 7-11% of all use.

Use by materials type

The three largest bodies of materials are rare books, university archives materials, and manuscript materials. Use of these materials was correlated to patron affiliation based on rates of use in order to ascertain which kinds of researchers are using which kinds of materials. Results averaged over three years are shown in Figure 12.

- The group that uses rare book materials the most is NCSU undergraduates (28%), followed by NCSU faculty and staff (who account for 36% of use combined). Data related to use of rare books by remote patrons was unavailable for analysis because Inter Library Loan – not the SCRC – is responsible for making copies from rare books.

- Manuscript materials are used mostly by visiting researchers, who are responsible for 48% of manuscript materials’ total use. Second to visiting researchers, NCSU faculty are responsible for 18% of manuscript material’s usage.

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9 See Terminology for definitions of these material types.
University archives materials have the most evenly distributed use among the highest number of patron affiliation types. Visiting researchers, NCSU undergraduates, NCSU staff, NCSU graduate students, and NCSU faculty all make significant use of these materials.

It is also useful to view the same data in real numbers as opposed to ratios. Real numbers on use by material type and patron affiliation are shown in Figure 13. What this chart makes clear is that in real numbers, university archives materials are used more frequently than other types of materials. Rare book and manuscript materials receive relatively similar amounts of overall use.
Local community members use Rare Book materials twice as much as they use any other type of material.

NCSU alumni use manuscript materials twice as much as rare books and three times as much as university archives materials.

Visiting researchers make very little use of rare books but make significant use of both manuscript and university archives materials.

Use by collecting area

The SCRC collecting areas concentrate broadly on the History of Science, Engineering and Technology, Natural Resources, Agriculture, Biological Sciences, North Carolina State University, Textiles, Veterinary Medicine, and Architecture and Design. Unfortunately, collecting area is not a data field that is tracked anywhere for SCRC collections, so it was not possible to do an overall analysis of use related to collecting area. Instead, SCRC staff manually assigned collecting areas to the top 50 most used collections for analysis in this report. Results are shown in Figure 14. The percentages shown in Figure 14 do not add up to 100% because many collections pertain to multiple collecting areas.

Almost all of the top 50 most used collections (80%) were in the primary collecting area North Carolina State University, while nearly 20% of the top 50 most used collections pertained to Agriculture and Architecture respectively. No other collecting area was represented in any significant quantity.
Collecting areas related to top 50 most used collections

Data averaged over fiscal years 2007/08-2009/10

North Carolina State University
Agriculture
Architecture
Animal Welfare
Non-primary collecting areas
Design
Biological Sciences

Figure 14: Collecting areas related to top 50 most used collections