



Mapping Student Library Use

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Introduction

Ohio Northern University, founded in 1871, is a small, private institution located in Ada, Ohio. Heterick Memorial Library serves the four undergraduate colleges of Arts & Sciences, Business, Engineering, and Pharmacy.

During the summer of 2016, the first floor of the three-story library underwent a significant renovation. Now known as the Mifsud Collaborative Learning Center, the new first floor is a modern, open, and student-centered space with updated technology, flexible seating, whiteboards, and a café.

Following the renovation, the librarians needed a way to evaluate its success. Were students actually using the redesigned spaces? Although the library already had a gate counter at the main entrance, this only recorded how many people entered the building, not where they went upon doing so. Another method was needed for assessing which spaces students used.

This research seeks to answer the question: How much are students using the new first floor relative to the second and third floors?

Assessment Design

To answer our question, we designed an assessment in which library student workers counted how many students were using each area of the library at four times per day. To analyze and visualize the data, we used Excel and a digital map of the library created using geographic information systems (GIS).

Assessment Details:

- Divided the library into 31 areas based on location and type of seating.
 - Goal was to be able to tell what areas and types of seating students preferred.
- Created a paper map for student workers to use as a data collection sheet (Figure 1).
 - Prevented confusion by enabling student workers to clearly see what actual space was encompassed by each map area.
 - Used campus landmarks instead of cardinal directions to make it easier for students to identify each map area.
- Determined times for collecting data.
 - Picked times roughly four hours apart and 15 minutes after the hour so that "churn" from students departing for and coming from classes would have settled down.

Assessment Process

- Student workers collect data each day of the week throughout fall and spring semesters.
- Once each week student workers enter the data from the paper maps in an Excel spreadsheet.
- At the end of each semester and year the data is analyzed in Excel (Figure 3) and mapped in ArcGIS (Figure 2).

Data Collection Sheet

The data collection sheet (Figure 1) was drawn by hand on graph paper. This eliminated the need to use expensive and complex software such as Adobe Photoshop or Illustrator. The maps are not to scale and do not include some elements of the building such as bookshelves, staff offices, bathrooms, etc. The intent was to focus solely on the areas in which student workers needed to count patrons.

The sheet was then digitized into GIS software (Esri's ArcGIS 10.3). The outline of the library is to scale, but the areas are not. The average percent capacity was also added to the digital file for each area. The areas were then color coded by percent capacity to easily identify which areas of the library receive the most use (Figure 2).

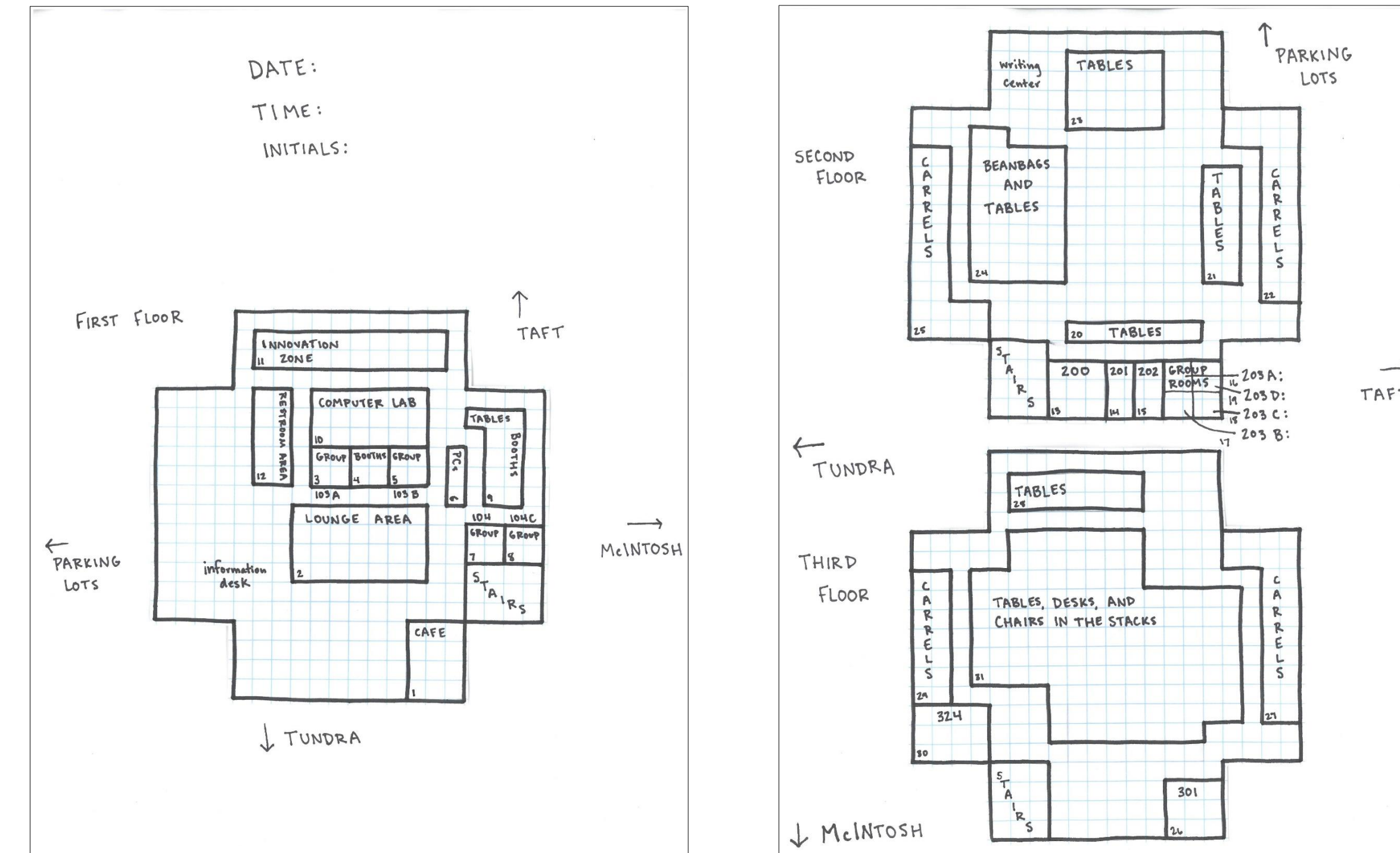


Figure 1: Front and Back of the Data Collection Sheet

GIS Maps

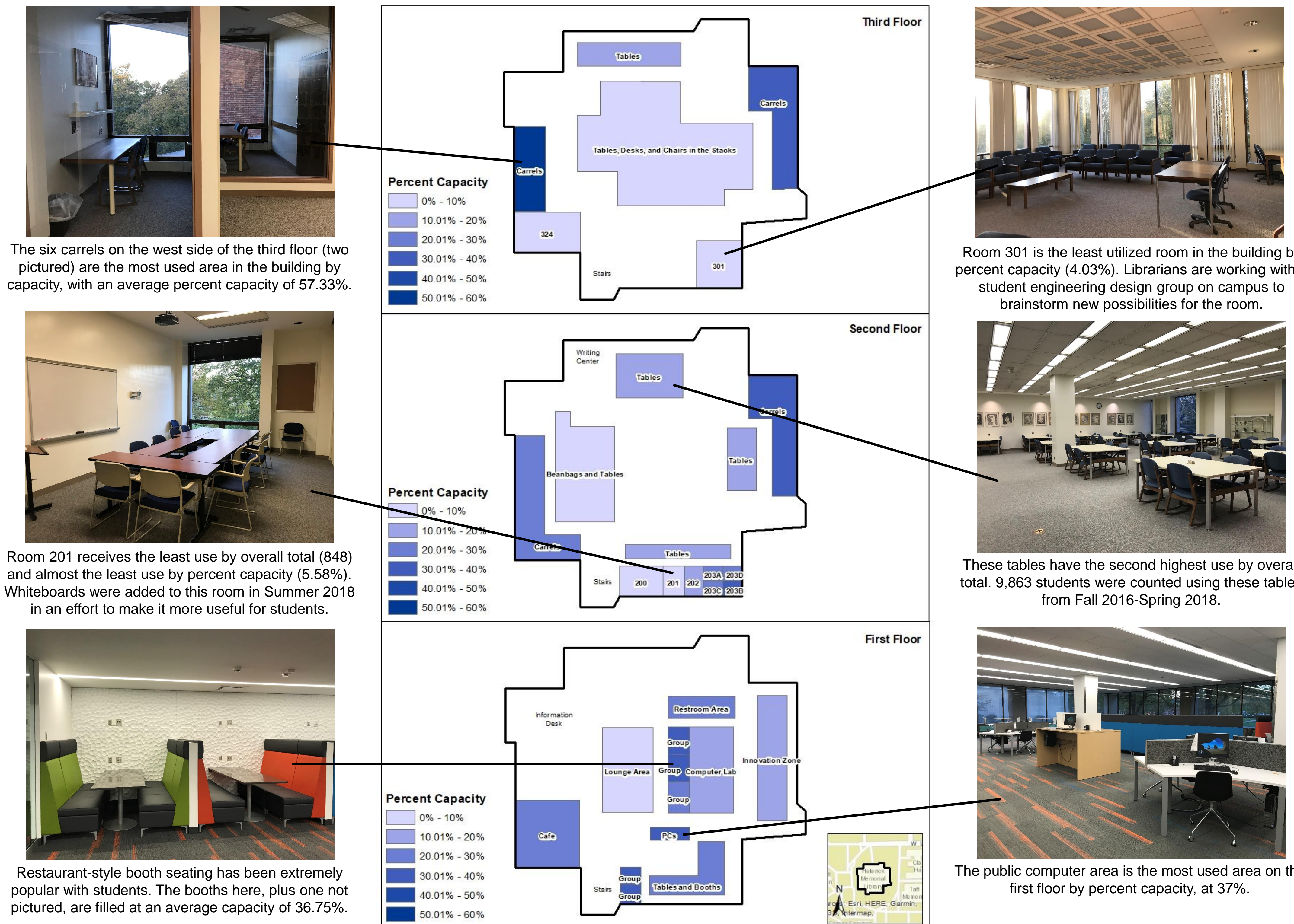


Figure 2: Color Coded Maps Created in ArcGIS

Results

Fall 2016 – Spring 2018	First Floor	Second Floor	Third Floor
Overall Total	60,368	48,478	22,520
Average	164.94	132.45	61.70
Percent Capacity	20.24%	13.03%	10.06%
Percent of Overall Total	45.91%	36.86%	17.12%

Figure 3: Example of data analysis performed in Excel

Percent Capacity (average ÷ capacity) was used as a measure in order to more accurately determine which areas were being fully utilized. Going solely by total number of patrons in an area, the most used areas on each floor are simply the largest. While this is important information, it does not accurately reflect how well the areas are being utilized. For example, an average of 30 students may be recorded for a certain area—but if this area seats 70 students, then this area, while receiving a lot of use, is not being fully utilized. However, if an average of 6 students is recorded for a certain area, then it may seem that this area is not receiving a lot of use—but if this area only seats 6 students, then it is being fully utilized.

Conclusions & Further Study

The data show that the new first floor is receiving the most use of all three floors by all measures, from the overall total number of students to the percent of total building use. This provides a clear answer to the research question and a strong indication that the first floor redesign was a success. Although there may be some element of "shiny and new" to students' preference for the first floor, since use of the first floor has remained the same through all four semesters in which data has been collected, it is more likely that students actually find the first floor to be meeting their needs.

Even though the main question for which the patron count assessment was designed has been answered, the librarians plan to continue the assessment, as the data are helpful in many other ways. One way in which the librarians have used the data is to pinpoint the least used areas, and make small updates to them to make them more attractive to students. For example, the librarians added whiteboards—a student favorite—to several rooms on the second floor that were among the least used in the entire building. In addition, the librarians also hope to analyze the data to see if there are particular areas that are busier or less busy at certain times, on certain days, or during certain times of the semester, such as finals week. This can help direct resources to the right areas to make the library as useful as possible for students.

Acknowledgments

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