# Finding Our Happy Place: Assessing Patron Satisfaction after a Comprehensive Remodel

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This paper compares the longitudinal results of three LibQUAL+ studies conducted at the University of Idaho Library. In particular, the most recent survey follows a major renovation that prioritized study space and a collaborative learning environment. The impact upon patron satisfaction across categories was examined and the highest satisfaction was found among daily library users and faculty, although differences emerged when individual respondent groups were compared. Opportunities for better engagement with daily library users and graduate students were identified. Overall, it was found that the renovation had a positive impact on satisfaction scores.

## Introduction

The building which currently houses the University Library was built in 1957. This 23,606 square foot structure saw significant growth during a 1991 renovation that nearly quadrupled its size. Little cosmetic change took place following that major renovation, and by the mid-2010s the library was due for upgrades. To this end, the library administration solicited bids for a new first floor remodel and obtained the services of a well-known architecture firm with experience in library renovations. The construction began during the summer of 2015, and while disruptive to the point of blocking access to the entire first floor throughout the academic year, it resulted in a visibly modern and functionally efficient first floor. A grand reopening and ribbon cutting ceremony took place on April 1, 2016. Over the course of the next two years, the second floor of the library underwent a major renovation which was in its final stages during the end of spring semester 2018.

### Renovation

The renovation of both the first and second floors of the library brought about functional and aesthetic updates. Prior to renovation three service desks were separately located and scattered across the first floor, with circulation/reserves, reference, and information technology services (ITS) desks located nearly 30 feet apart. Following the first floor renovation, these three desks were co-located into a single service point that was easily visible from just inside the library's main entrance. The decision to co-locate the desks initially met with mixed reaction from library staff, some of whom wondered if co-locating would lead to librarians being asked to help with routine circulation tasks while ITS staff would be faced with challenging reference questions. In spite of these concerns, the decision to move the desks to a single location was ultimately made under the assumption that staff from any area of the library should be easily able to refer patrons to the appropriate person regardless of who initially received the question. In addition, the visibility of three distinct workstations with appropriate signage seemed likely to make it clear to patrons that each area of the desk served a different purpose.

In order to make room for the larger new desk area and to increase patron seating and workspace, librarians downsized an aging physical reference collection. This increased the space available for movable furniture and whiteboards. Armchairs with privacy panels, couches, and booth-seating were added to offer additional study options for students, and an increased number of electrical outlets were installed throughout the floor near the new seats and tables. Stylish carpet, wayfinding and informational signage, as well as a small cafe with snacks and coffee further added to the cosmetic and practical updates. Finally, a new special

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*Figure 1.* **Pre-Renovation Reference and Circulation Desks (left) and Former Site of the Reference and Circulation Desks (right).**

collections reading room, a new reservable instruction room, three new group study rooms, and a maker-space rounded out the renovation.

The library's second floor renovation aligned with the goals of the first in terms of increasing the amount and comfort of student study and seating areas. Large, clunky wooden desks and tables along with dated carpet were removed and replaced with modern seating and new carpet. Movable tables of different sizes, full-sized couches, and numerous whiteboards on wheels are now placed throughout the open areas of the floor. The whiteboards have especially proven popular as evinced by the fact they are frequently covered in student work. In addition to the furniture changes, the library's DVDs, paperback books, graphic novels, and travel collections were moved to the floor amidst the seating in order to facilitate browsing.

It should be noted that the renovations that took place in recent years occurred only on the first and second floors of the library, which have traditionally been presented to patrons as group study areas. Whereas the third and fourth floors of the University Library are designated quiet floors with signs indicating such and with occasionally-needed enforcement by librarians when noise complaints arise, the first and second floors have long been free of noise restrictions. One of the primary goals (and successes) of the first floor renovation was to drastically increase the amount of comfortable space available for group study and conversation.

## Assessing the Renovation

Like most academic libraries that invest large sums of money in projects, the University Library needed to assess the impact of these changes. Gate counts and student feedback are two primary means to gauge the impact of

building changes following a renovation. Although the library has kept track of gate counts for nearly two decades, changes in the count itself do not offer a complete picture of patron satisfaction with library changes. From a high of 12,894 in 2003-04, the university's full-time enrollment (FTE) has declined to its current count of 11,841 in 2018-19. The decrease in the number of students on campus, which reflects lower enrollment overall as well as a higher number of online students, undoubtedly contributes to a decrease in patrons needing to use the library's physical building, making gate counts less helpful for assessing the impact of our renovations. In addition, the University Library has drastically expanded its electronic holdings over the last decade, thereby ensuring that accessing an increasing number of valuable resources do not require an in-person library visit.

Anecdotal evidence from patrons also offers a helpful but incomplete picture when assessing these renovations. While the verbal and written feedback stemming from a variety of sources (the campus newspaper, comments at the reference desk, anonymous submissions to our library feedback box) suggests that patrons have been pleased with the changes in the library, this feedback does not indicate how these renovations impacted infrequent library users and/or those who chose not to share feedback. For this reason, the library decided to seek an additional form of assessment regarding the library's physical changes.

The University Library has a history of using the standardized LibQUAL+ survey to assess patron satisfaction with services, resources, and its physical space. Previously administered in 2004 and 2009, LibQUAL+ again provided a means to assess various aspects of the library in the fall of 2018. While librarians analyzed the results of the entire survey to assess their efforts and consider modifications to them, they paid particular attention to the "Library as Place"

*Figure 2.* **Pre-Renovation Reference Desk and Collection (top left) and Post-Renovation Combined Service Desk and Reference Collection/Group Study (top right and bottom).**

affect, which seeks to assess patron perceptions and satisfaction with the library's built environment. Results of the 2018 survey were compared with the two prior iterations both of which occurred prior to the first and second floor renovations. This article describes the results of this assessment and suggests that LibQual+ may prove a valuable resource for institutions wishing to assess space renovations.

## Literature Review

Discussion of libraries as physical spaces is an evergreen topic, with relatively recent peaks in interest at the turn of the millennium when the idea of "third spaces" came into vogue, and again a few years later when the information commons model began to be embraced. For this study we reviewed papers that discussed the confluence of library renovation and assessment in order to inform our interpretation of our most recent LibQUAL+ survey. De

Jager (2015) employed LibQUAL+ data for a similar purpose as the present study, and noted "while user satisfaction does not necessarily signify impact...[it] may enable one to infer that users derive benefits from using library spaces, and that they perceive these spaces to be valuable" (p. 4). There is much agreement in the extant literature. Applegate (2009), Mizrachi (2010), and Ojennus and Watts (2017) found that students value the library as a place to conduct the business of studying. Bailin (2011) found that students value the library building as a study space, and the digital collections as a research resource. Both Cha and Kim (2015) and Adeyemi (2017) found that what students value is a quiet environment, comfortable seating, and plentiful study space.

Baker et al. (2018) found that library facilities matter more to students than faculty and de Jager found that library as place was more important to undergraduates than graduate students:

*Figure 3.* **Pre-Renovation Second Floor Seating and Group Study (left) and Post-Renovation Second Floor Seating and Group Study (right).**

It is suggested that these results provide substantial evidence that undergraduate students value the library as a place of learning; that they like being there and that they object to barriers that they perceive as preventing them from spending even more time there (de Jager 2015, p. 8).

Shill and Tonner (2003) have found that despite the availability of online resources, students are using the physical library space in increasing numbers, particularly in renovated libraries. Yoo-Lee, Heon Lee, and Velez (2013) found that the preponderance of "millennial" students expected the library to be a social space, although they also expected to be able to find quiet places within the library as well. Perhaps most interestingly, both Gerke and Maness (2010) and Gullikson and Meyer (2016) found that the physical library impacted student perceptions of digital resources even if students rarely used the actual library.

The LibQUAL+ survey itself is a popular subject for study. Originally implemented in 2000, the survey has held fast to "22 items and a box," allowing for significant longitudinal study, as well as comparison across libraries. For each item, respondents indicate a minimum, desired, and perceived service level. These questions address three dimensions, Affect of Service, Information Control, and Library as Place. Nearly 3000 institutions have utilized LibQUAL+, tallying responses from more than 2 million people (Town, 2016). Many libraries have been satisfied with the data and analytics that LibQUAL+ provides (Atkinson & Walton, 2017; McCaffrey, 2019; Town 2016). However, others have raised concerns about the survey, including its length, the fact that it asks respondents to parse potentially opaque terminology, and the lack of norming across respondents' scores (Edgar, 2006; Natesan & Aerts, 2016; Saunders, 2007). Perhaps because of these challenges, many libraries tend to

look to LibQUAL+ trends in satisfaction over time and comparative levels between dimensions rather than assigning hard values to the scores.

## Methodology

The University Library administered the LibQual+ survey in the Fall of 2018 in much the same manner it had in 2004 and 2009. The library gained IRB approval and then began working with the Registrar's office and with the Human Resource Department to obtain lists of students, faculty, and staff email addresses. Once these lists were made available as Excel sheets, library staff used Excel's RAND function to randomize the lists and select the desired number of individuals who would receive a survey invitation. The university's ITS department offered to distribute the survey to selected recipients. Each individual selected to receive the survey invitation received three emails during the course of the semester, the initial invitation and then either a thank-you-for-participating email or another request to take the survey. In addition to the thank-you emails, twenty survey respondents were randomly selected to receive a $20 Amazon gift card.

Once the survey closed, the library waited for a LibQual+ report to be generated so that analysis of the results could begin. While libraries administering the LibQual+ surveys have access to the raw data collected from their respondents, they are also provided with a standardized report containing calculated data. In addition to demographic information about respondents, the results report includes the means of all scores and information about standard deviation for each question. Additionally, two gap scores for each question show the difference between 1) respondents' minimum accepted level of service and their perceived level of service (an adequacy score) and 2) respondents' desired level of

service compared to their perceived level (a superiority score). Means and standard deviations for each gap score are also provided.

In general, negative adequacy mean scores indicate that respondents feel that the perceived level of service currently offered by the library is less than what they consider to be adequate and suggest an area of service libraries would do well to investigate further. On the other hand, positive superiority mean scores provide evidence that the library is actually perceived as offering an even greater level of service than respondents desire, suggesting that the library is providing a service particularly well. By comparing the difference in adequacy and superiority gaps over the three iterations of the survey, the library is able to gain information about both deficiencies and improvements over time.

## Limitations

The University Library has traditionally preferred to administer the LibQUAL+ survey during spring semesters under the assumption that patrons with at least one full semester of experience will have a better understanding of library services than those newly arrived. This timing was adhered to in both 2004 and 2009. However, due to the campus administration of the national NSSE survey in the spring of 2018, our campus Institutional Effectiveness and Accreditation office asked the library to wait until Fall 2018 to administer the latest LibQUAL+ survey. To this end, the survey was opened October 3, 2018 and closed December 7, 2018.

The need to implement the survey in a fall semester likely contributed to a decreased number of respondents from previous iterations. In 2004, 571 students, faculty, and staff responded to LibQUAL+ while 568 responded in 2009. In spite of two reminder prompts in the fall of 2018, the number of respondents decreased to 281. In addition to the timing of the survey, we surmised that the increasing use of mobile devices by college students alongside the layout of the survey, which does not translate well to small-screen viewing, could have stymied participation among those who received survey invitations. Nevertheless, the number of respondents proved enough to result in a statistically significant sample size with a 95% confidence level and a margin of error at 6%.

## Results

In the context of this article, respondents' perceived service performance and desired service performance within and across the "library as place" (LP) dimension were of most interest given the library's recent renovation activities. Even more important than the actual scores respondents gave to each of these two dimensions is the gap between

them. The superiority gap offers an indication of how large the gap is between what respondents currently believe the library offers and what they wish the library offered. Ideally, following a renovation, this gap would narrow as the library would be seen as providing the type of physical environment desired by patrons. The results of the LibQUAL+ survey do suggest the renovations helped narrow this gap, although differences in the superiority gap appear among patron types.

## Differences across Time

**Average Perceived Service Performance across Time**

On the LibQual+ scale of 1 (low) to 9 (high) across the entire LP dimension (5 questions, see Table 1), respondents' average perceived level of service equaled 7.54, an increase from both the 2004 (6.88) and 2009 (6.74) survey results. In addition, in 2018 all perceived ratings for individual LP questions were higher than respondents' reported in either 2004 or 2009. Interestingly, both the average scores and each individual question indicate that respondents' perceptions of the library's physical space decreased from 2004 to 2009, but rebounded in 2018 to scores that were higher than reported in 2004. The dip in 2009 scores is an interesting phenomenon, but for the purposes of assessing current library space in light of renovations it remains of less concern to the library than current scores.

| Table 1. Average superiority gap for the "library as place" service level* | | | | |
|---|---|---|---|---|
| ID | Question text | 2018 | 2009 | 2004 |
| LP-1 | Library space that inspires study and learning | -0.30 | -0.91 | -0.85 |
| LP-2 | Quiet space for individual activities | -0.21 | -0.37 | -0.50 |
| LP-3 | A comfortable and inviting location | -0.06 | -0.70 | -0.61 |
| LP-4 | A getaway for study, learning, or research | -0.06 | -0.81 | -0.67 |
| LP-5 | Community space for group learning and group study | 0.23 | -0.19 | -0.30 |
| LP dimension | | -0.09 | -0.58 | -0.58 |
| *Note: Negative values indicate that users' perceived ratings are less than their desired ratings while positive values indicate that users' perceived service performance exceeds their desired expectations. | | | | |

**Average Desired Service Performance across Time**

A similar pattern of change over time was seen when examining the desired service level. (For the purposes of this study, we consider the built physical space of the library a service offered to patrons.) In 2018, the desired level of service for the entire LP dimension across all respondents equaled 7.63, reflecting higher expectations than expressed in both 2004 (7.45) and 2009 (7.33). Again, as seen with the data on perceived level of service, respondents' desired level of service decreased between 2004 and 2009 but increased in 2018. The data also showed that desired service expectations in 2018 were higher across all of the individual LP questions than in either 2004 or 2009. In sum, both the perceived and desired service levels related to space have risen.

**Average Superiority Gap across Time**

More important than the mean scores themselves are the gap between what patrons perceive and desire in terms of physical space. Across time, the gap between these two variables has decreased noticeably. Across the *entire* LP dimension, the difference between the perceived and desired service performance ratings (the superiority gap) equaled -0.09 in 2018, and as seen with the perceived and desired service level scores, this superiority gap was smaller than observed in 2004 (-0.58) or 2009 (-0.58) (Table 1). Especially noteworthy is the positive superiority gap that currently exists for LP question 5, which queried participants about their perceptions and desires related to group learning and group study space. As of fall 2018, patrons' perceptions of the space actually exceeded what they desired in the library.

## Differences across Patron Groups

**Average Perceived Performance across Groups in 2018**

Breaking down the LP scores among our four respondent groups -- undergraduates, graduates, faculty, and staff -- provides the library with an opportunity to identify which groups are most satisfied with the physical library, and more importantly, increase consideration of what improvements might be made for less satisfied groups. In 2018 across the entire LP dimension, undergraduate students perceived that the library, on average, currently offers a higher level of service than graduate students (7.11 and 7.45, respectively), while differences in average perceived ratings were also observed when comparing faculty (7.20) to staff (7.66). Data from the individual questions in 2018 also shows differences in average perceived ratings. Faculty respondents, on average, consistently had the lowest perceived ratings across all LP questions; undergraduate students and staff had the highest ratings, while graduate students' perceived ratings were somewhere in the middle.

**Average Desired Performance across Groups in 2018**

In terms of the desired levels of LP, interesting findings were also discovered when each of the four respondent groups were compared on the entire LP dimension and individual questions. Graduate students (8.01), on average, held higher expectations for the LP service dimension than undergraduate students (7.81), while staff (7.63) had higher expectations than faculty (6.76). This trend continues when each individual LP question was examined as graduate students and staff had higher expectations than undergraduate students and faculty, respectively.

**Average Superiority Gap across Groups in Each Year**

Reflective of the perceived and desired scores, differences in the superiority gap were likewise observed based on respondent type, with undergraduate students (-0.10), on average, having a lower superiority gap than graduate students (-0.56) in 2018 across the *entire* dimension. Comparatively, both faculty (0.44) and staff (0.02) had positive superiority gaps, indicating that their perceptions of the LP dimension exceeded their desired expectations. The differences in desired LP service level for undergraduate students and graduate students were noticeable when the average superiority gaps for *individual* questions were compared as well. Across all questions, graduate students had larger superiority gaps than undergraduate students, and on two questions (LP-4 and LP-5), undergraduate students actually had positive superiority gaps (Table 2). For comparison with recent scores, the gaps present in both 2004 and 2009 are also depicted in Tables 3 and 4.

**Table 2. Average superiority gap for the "library as place" service level, by respondent group, 2018**

| ID | Undergrad | Graduate | Faculty | Staff |
|---|---|---|---|---|
| LP-1 | -0.32 | -0.81 | 0.04 | 0.21 |
| LP-2 | -0.21 | -0.59 | 0.59 | -0.44 |
| LP-3 | -0.05 | -0.41 | 0.39 | -0.06 |
| LP-4 | 0.02 | -0.57 | 0.56 | -0.10 |
| LP-5 | 0.04 | -0.29 | 1.53 | 0.31 |
| LP dimension | -0.10 | -0.56 | 0.44 | 0.02 |

**Table 3. Average superiority gap for the "library as place" service level, by respondent group, 2004**

| ID | Undergrad | Graduate | Faculty | Staff |
|---|---|---|---|---|
| LP-1 | -0.96 | -1.02 | -0.24 | -0.77 |
| LP-2 | -0.57 | -0.69 | -0.01 | -0.23 |
| LP-3 | -0.68 | -0.85 | -0.04 | -0.45 |
| LP-4 | -0.75 | -0.83 | -0.07 | -0.89 |
| LP-5 | -0.64 | -0.18 | 0.55 | -0.41 |
| LP dimension | -0.71 | -0.72 | -0.01 | -0.53 |

| Table 4. Average superiority gap for the "library as place" service level, by respondent group, 2009 | | | | |
|---|---|---|---|---|
| ID | Undergrad | Graduate | Faculty | Staff |
| LP-1 | -0.97 | -1.29 | -0.57 | -0.77 |
| LP-2 | -0.57 | -0.70 | 0.23 | -0.41 |
| LP-3 | -0.88 | -0.93 | -0.34 | -0.64 |
| LP-4 | -0.96 | -1.00 | -0.52 | -0.71 |
| LP-5 | -0.72 | -0.26 | 0.47 | -0.06 |
| LP dimension | -0.81 | -0.79 | -0.22 | -0.53 |

## *Relationship between Overall Satisfaction and the Library as Place*

In addition to survey results related solely to the library as a physical space, LibQual+ results also include an overall satisfaction score based on survey questions related to general satisfaction. Cross tabulations indicate that the superiority gaps for the LP service dimension were related to those for the overall satisfaction. Average LP superiority gaps were lowest (0.01) for those respondents who rated the overall quality of the service provided by the library on the high end of the scale (data values between 7 and 9). On average, respondents who rated the overall quality of service as average (data values between 4 and 6) had a negative LP superiority gap (-1.03), indicating that their expectations for the library's space had not been met.

This trend continues when differentiating between undergraduate and graduate respondents. Across both students groups, those who rated their overall satisfaction with the library as high had lower overall LP superiority gaps on average than those who rated service quality as average. However, undergraduate students who rated overall satisfaction as high had lower negative LP superiority gaps on average (-0.07) than graduate students (-0.44) with similar overall service quality ratings (Table 5).

| Table 5. Cross tabulation of "how would you rate the overall quality of the service provided by the library?" and average superiority gap for "library as place," 2018 | | | | |
|---|---|---|---|---|
| | Undergraduate | | Graduate | |
| | High (7-9) | Average (4-6) | High (7-9) | Average (4-6) |
| LP-1 | -0.25 | -1.00 | -0.65 | -2.8 |
| LP-2 | -0.15 | -0.89 | -0.46 | -2.00 |
| LP-3 | 0 | -0.60 | -0.34 | -1.17 |
| LP-4 | 0.03 | -0.10 | -0.50 | -1.33 |
| LP-5 | 0.05 | -0.10 | -0.14 | -1.75 |
| LP dimension | -0.07 | -0.52 | -0.44 | -1.84 |

Similar discrepancies between undergraduate and graduate students' perspectives were also seen when *individual* LP questions were examined. Across all individual questions, the undergraduate students who rated the overall service quality as high had lower average superiority gaps than graduate students on the individual questions. This difference was most apparent with the "a getaway for study, learning, or research" question (LP-4), with undergraduate students who rated the overall service quality as high reporting an average superiority gap of 0.03 while graduate students with the same service quality rating had an average superiority gap of -0.50. Additionally, undergraduate students who rated overall service quality as high had average superiority gaps that were positive or nonexistent (perceived and desired ratings were the same, on average) for three individual questions (LP-3, LP-4, and LP-5), while graduate students had negative superiority gaps on all individual questions, demonstrating that on average, their desired expectations were not met.

Finally, cross tabulations demonstrate an interesting relationship between in-person library use and the average superiority gap across the entire LP dimension as well as in each individual question. In the 2018 survey, a plurality of respondents indicated that they used resources on the library premises weekly (29.18%) or monthly (27.05%), with fewer respondents reporting that they used library resources in-person on a quarterly (19.22%) or daily (14.59%) basis, or never (9.96%). The respondents who reported using library resources in-person on a daily basis had smaller average superiority gaps across the *entire* LP dimension (-0.05) than those who used library resources in-person on a weekly basis (-0.07) (Table 6).

| Table 6. Cross tabulation of "how often do you use resources on library premises" and average superiority gap for "library as place," 2018 | | |
|---|---|---|
| | Daily | Weekly |
| LP-1 | -0.32 | -0.31 |
| LP-2 | -0.41 | -0.12 |
| LP-3 | 0 | -0.07 |
| LP-4 | 0.05 | 0.04 |
| LP-5 | 0.45 | 0.09 |
| LP dimension | -0.05 | -0.07 |

Interestingly, this trend takes a slightly different turn though when the *individual* LP questions are examined. The average superiority gaps for respondents who used the library in-person on a daily basis were positive and higher only for individual questions LP-3 (0), LP-4 (0.05), and LP-5 (0.45). The higher positive values demonstrate that those who used the library in-person on a daily basis had their expectations exceeded with regard to the library being "a

comfortable and inviting location," "a getaway for learning," and a "community space." In comparison, those who used the library in-person on a weekly basis had smaller negative superiority gaps on questions LP-1 (-0.31), a "space that inspires study and learning," and LP-2 (-0.12), "a quiet space for individual activities," than those who used the library in-person daily.

However, when data from the undergraduate and graduate respondent groups is analyzed separately, clear differences in average superiority gaps and the frequency of in-person library use are also observed across the *entire* LP dimension (Table 7). Across the LP dimension, undergraduate in-person library users had a positive superiority gap when using the library on a weekly (0.03) basis compared to a negative superiority gap for daily (-0.24) users, while graduate students who used the library in-person on a daily basis (-0.10) had a lower negative superiority gap than weekly visitors (-0.53). Similar differences were observed between undergraduate and graduate students across the *individual* LP questions.

| Table 7. Cross tabulation of "how often do you use resources on library premises" and average superiority gap for "library as place," by respondent group, 2018 | | | | |
|---|---|---|---|---|
| | Undergraduate | | Graduate | |
| | **Daily** | **Weekly** | **Daily** | **Weekly** |
| LP-1 | -0.77 | -0.04 | -0.33 | -0.85 |
| LP-2 | -0.42 | -0.13 | -0.17 | -0.57 |
| LP-3 | 0 | 0.04 | -0.50 | -0.29 |
| LP-4 | -0.04 | 0.17 | -0.17 | -0.42 |
| LP-5 | 0.04 | 0.09 | 0.67 | -0.56 |
| LP dimension | -0.24 | 0.03 | -0.10 | -0.53 |

## Discussion

### *Change over Time*

Overall, the University Library's LibQual results over the last 15 years show some noticeable changes with regard to the library as a physical space. With few major changes in programming, resources, or staffing, the large-scale renovations undertaken between 2015 and 2018 are likely the cause of increased satisfaction since the last survey was administered in 2009. As the results show, LibQUAL+ data from 2018 demonstrates that the average *perceived* service performance ratings for the LP dimension have increased when compared to the 2004 and 2009 survey results. A similar upward trend was also seen in the 2018 average *desired* level of service, which was an increase from the 2004 and 2009 expectations. Although the perceived and desired service level ratings for the LP dimension are helpful for establishing a baseline and goal for service, the superiority

gap provides a clearer picture of how far a library must go to meet the expectations of its users.

In examining the LP dimension, data indicates that the overall average superiority gap across all survey respondents in 2018 was smaller than in either 2004 or 2009, meaning that there is a smaller gap between what patrons want to see at the library and what they actually perceive to be offered. This suggests that the library has moved in the right direction in terms of its service offerings related to the library as a physical place. Although it is not possible to directly pinpoint the cause of this improved perception, the fact that the library underwent significant renovations between the 2009 and 2018 surveys suggests that improvements to the physical environment of the library have been met with approval by patrons, especially by undergraduates, the patron group most likely to use the library's physical space.

Offering additional evidence of the improved perceptions, when the individual library as place questions from 2018 were examined, similar trends emerged. Across the five LP questions, the average superiority gaps decreased over the years as well. In addition to the expected increase in satisfaction with regard to group study space, which increased and improved considerably with the renovations, the results also demonstrate smaller superiority gap scores (indicating increased satisfaction) for "quiet space for individual activities" and "a getaway for study, learning, or research." Although the renovation did not focus on the quiet study floors, a more positive view of these un-renovated quiet library spaces may be due to the fact that group study spaces are now more noticeable and inviting. Individuals and groups seeking collaborative spaces have likely found what they needed in the newly renovated areas, thereby decreasing the likelihood that these groups will migrate into the quiet spaces, and thus creating a better environment for those who wish to engage in quiet individual activities in the library. This assumption is made stronger by the fact that, among undergraduates at least, there now exists a positive superiority gap for LP question asking about "community space for group learning and group study." That we are now exceeding patron expectations in this area likely means we have fewer students seeking out group space in the quiet third and fourth floors, improving satisfaction levels on both fronts.

When both the change in scores over time as well as the superiority gaps are considered, three suggestions become possible: 1) current university students, faculty, and staff are more satisfied with the Library's physical environment now than prior to our renovation; 2) while perceptions of space have become more positive, respondents have also increased their expectations; and overall, 3) the Library currently is closer to meeting respondents' desired expectations now

than in either 2004 or 2009. With few changes in patron demographics and/or library resources between the early surveys and the latest iteration, we may surmise that the library renovations have contributed to this increase in patron satisfaction with the library's physical space.

## Differences among Participant Groups

The library's renovation seems to have been more impactful on certain patron groups than on others. Even though the overall LP dimension had perceived performance ratings that were close to respondents' expectations, differences in perspectives were discovered when the data was examined by respondent type. Although undergraduate respondents in 2004 had the highest average perceived ratings of all groups, in neither 2004 nor 2009 none of the perceived ratings for the individual questions exceeded expectations. By 2018, however, undergraduate respondents reported that on average, the library's current service level as "a gateway for study, learning, or research" and as a "community space for group learning and group study" exceeded their expectations.

Compared to undergraduates, graduate respondents had lower average perceived LP ratings in 2018, even though they increased substantially from 2004 and 2009. In 2018, graduate students also had higher LP service level expectations overall than undergraduate students. This trend was more pronounced when the average desired service levels in 2018 were examined for the individual questions, with graduate students reporting significantly higher expectations for each question than undergraduate students, resulting in larger average superiority gaps with no instances of perceptions exceeding expectations.

As with the changes in survey responses over time, the comparison of participant groups also leads to several conclusions: 1) while both undergraduates and graduate students rated the library's physical environment higher now than in previous years, graduate students are not as satisfied as undergraduates, and 2) the library may wish to further investigate graduate students' unmet library space needs.

## Overall Satisfaction and Usage Frequency

The value of comparing the LP question results with respondents' overall satisfaction as well as their frequency of in-person library use is that it offers insight into the nuances of student preferences and expectations. The fact that higher overall satisfaction levels coincided with higher perceptions of the LP dimension suggests that the physical space of the library contributes significantly to the students' perceptions of the library as a whole. This in and of itself lends evidence to the fact that the library was warranted in spending a considerable sum on recent renovations. While not studied directly by this analysis, librarians hope that increased student satisfaction both with regard to physical space and across the board will inspire students to avail themselves of other library services as well, including those pertaining to staff expertise and information resources. With regard to the frequency of patron visits to the library, we also are able to glean some additional information about patron preferences and the impact of our renovation. Although overall, daily use corresponds to higher satisfaction with the physical environment, the differences seen between undergraduates and graduate students warrant further consideration by library staff and is likely an area we will continue to investigate in the future.

## Conclusion

The results of the most recent LibQUAL+ survey clearly show that the average perceived scores for the LP dimension have increased since 2004 and 2009. At the same time, participants' expectations seem to have increased as well. Among the various groups of respondents, faculty and staff indicate that the current physical library exceeds their desired level of what library space should look like, while undergraduate students perceive the current space to be relatively close to their desired expectations. However, when compared to other groups, graduate students' expectation levels have risen high enough that the library does not currently meet their desired levels. This could be attributed to graduate students having completed their undergraduate studies at institutions with more impressive physical library spaces. At the same time, because there is a relationship between "library as place" and "overall satisfaction" with the library, it is possible that graduate students' responses about the physical space are in some way reflective of their overall satisfaction. Given that they tend to be less enthusiastic about the library's resource availability, it is possible that this dissatisfaction has bled into other areas of the survey. Nevertheless, the fact that overall satisfaction scores have improved, and moreover that physical space satisfaction scores have improved, offers the library evidence that the recent space renovations are seen as valuable by patrons.

## Future Investigations

While the LibQUAL+ survey has merits in allowing libraries to compare the same concepts over time, the assessment has limitations. In addition to criticisms leveled at the survey format and methodology by other researchers, the numbers alone do not necessarily help librarians understand the "whys" behind the scores. What the survey does do well is to help librarians identify areas of service that should be examined more closely. To this end, it is likely that

the University Library will want to conduct additional investigations among graduate students to understand why they seem less satisfied than undergraduates with the library's physical space.

Questions that need to be addressed specifically to graduate students may include: Are graduate students more likely to desire quiet study space? If so, does the fact that the library's "quiet" space is yet un-remodeled affect graduate students' satisfaction? Are graduate students unaware of the hidden quiet nooks spread throughout the library? Are their responses to "library as place" questions informed by their previous libraries' space offerings? Does the abundance of undergraduates in the library make the space less inviting for older students?

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