An analysis of patterns in librarian services, 2017-2021

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Introduction

Bailey Library staff provide services to students at Slippery Rock University in multiple ways. Specifically, staff collect information from students who participate in library-based instruction, students who use the chat function to ask questions of librarians, and students that make appointments to obtain assistance on specific research projects.

In order to assess the quality of their services, Bailey Library staff asked the Statistical Consultation Center to analyze the data collected between August 2017 and December 2021. I have conducted a thorough data analysis of librarian data in hopes to determine whether the services offered at the Bailey Library are of benefit to the students that use the services.

The specific research questions provided by the library are:
1. Are students using the academic services provided by the library?
2. How many students are utilizing the different academic services?
3. When are the services being utilized?
4. Are particular student populations using the academic services at different rates?
5. How do student feel about the services they have used?

Materials & Methods

Data were analyzed using SAS and R.

Results

1. **Are students using the academic services provided by the library?**
2. **How many students are utilizing the difference academic services?**

Data were collected from 666 students related to the libarian instruction between August 2017 and December 2021. This is an underestimate as to how many students utilize this service because some librarians are not utilizing a student survey at the end of their lesson(s).

Data were collected on a total of 1,626 chats between August 2017 and December 2021.

Research assistance was provided a total of 2,110 times between August 2017 and December 2021.

3. **When are the services being utilized?**

Timing of library instruction was not provided in the dataset.
Timing of chats was provided in the dataset and can be seen in Table 1 and Figure 1. In Table 1, we see that Tuesday and Wednesday seems to be the busiest days for students asking questions using the chat services. In Figure 1, we see that chat services are being used the most in September/October and March/April each year, which is around midterms. It also seems that students have been utilizing the services more within recent years.

Status	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
Answered	360 (22%)	381 (23%)	389 (24%)	270 (17%)	205 (13%)	1 (0%)	20 (1%)	1,626 (100%)
Missed	21 (17%)	30 (25%)	24 (20%)	23 (19%)	22 (18%)	0 (0%)	1 (1%)	121 (100%)
Totals	381 (22%)	411 (24%)	413 (24%)	293 (17%)	227 (13%)	1 (0%)	21 (1%)	1,747 (100%)

Table 1: Chat usage by day of the week between August 2017 and December 2021. Source: 2017-2021 Student Satisfaction Survey Database.
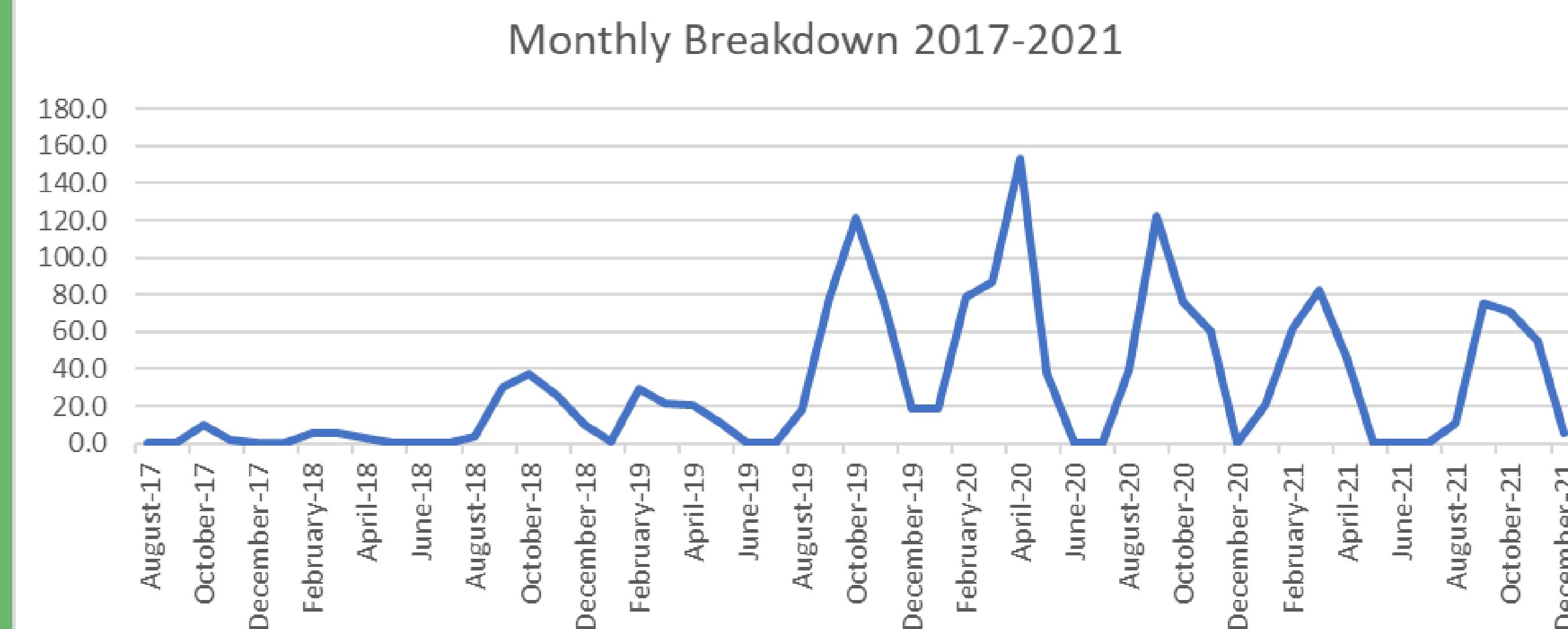
Results

Figure 1: Chat usage by month between August 2017 and December 2021. Source: 2017-2021 Student Satisfaction Survey Database.

4. Are particular student populations using the academic services at different rates?

The only data available on which student populations were using library services was for the librarian instruction. As can be seen, the largest group utilizing library instruction is the freshman; however, because it is the faculty that are choosing to assign library instruction, these proportions cannot be assumed to be repeated in the other data provided.

Class Level*	Frequency	Percent
Freshman	273	41.2%
Sophomore	117	17.7%
Junior	149	22.5%
Senior	118	17.8%
Other	6	0.9%
Total	**663**	**100.0%**

*Combined Freshman and Freshman; n/a, Sophomore and Sophomore (1st year transfer), Junior and between Junior and Senior, Senior and Sixth Year, and changed post baccalaureate, faculty, non-degree and other all into other.

Table 2: Frequency of Students Participating in Library Instruction by Class Level. Source: 2017-2021 Student Satisfaction Survey Database.

5. How do students feel about the services they have used?

Data are available both on the library instruction and on the chats. The results for the library instruction indicate a high level of satisfaction among students, with the vast majority of students agreeing on positive statements about the instruction. Similarly, there is an increase in comfort level after instruction that is statistically significant (p< 0.0001). For the chat statistics, the majority of students report high levels of satisfaction.

Question	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Average
The purpose of this library instruction session was clear. (n=663)	3 (0.5%)	1 (0.2%)	18 (2.7%)	253 (38.2%)	388 (58.5%)	**3.5**
I now feel confident that I can use the resources covered today. (n=666)	1 (0.2%)	2 (0.3%)	40 (6.0%)	339 (50.9%)	284 (42.6%)	**3.8**
The resources demonstrated today will be helpful in future assignments. (n=669)	2 (0.3%)	1 (0.2%)	16 (2.4%)	260 (38.9%)	390 (58.3%)	**3.9**
I found this instruction session to be informative. (n=667)	2 (0.3%)	1 (0.2%)	23 (3.5%)	283 (42.4%)	358 (53.7%)	**3.9**
This class exceeded my expectations. (n=668)	3 (0.5%)	34 (5.1%)	-	365 (54.6%)	166 (24.9%)	**3.8**
The class did not meet my expectations. (n=662)	212 (32.0%)	309 (46.7%)	-	25 (3.8%)	14 (2.1%)	**3.9**

Table 3: Student Opinions on Library Instruction. Source: 2017-2021 Student Satisfaction Survey Database.

Results

Question	Anxious (1)	Somewhat Comfortable (2)	Comfortable (3)	Confident (4)	Very Confident (5)	Average
Comfort Level BEFORE Session (n=671)	91 (13.6%)	259 (38.6%)	244 (36.4%)	56 (8.4%)	21 (3.1%)	2.49
Comfort Level AFTER Session (n=665)	1 (0.2%)	36 (5.4%)	243 (36.5%)	289 (43.5%)	96 (14.4%)	3.67

Table 4: Student Comfort Level Before and After Library Instruction. Source: 2017-2021 Student Satisfaction Survey Database.

Year	Ratings (1-4)				Average Rating
	1	2	3	4	
2017-2018	0	0	1	1	3.500
2018-2019	0	1	6	28	3.771
2019-2020	0	3	14	195	3.679
2020-2021	0	1	15	128	3.555
2021	1	0	8	58	3.836

Table 5: Rating of Chat Experience. Source: 2017-2021 Student Satisfaction Survey Database.

Class Level (n=650)*	Before today, have you attended a library instruction session at Bailey Library?		
	No	Yes	Proportion Yes
Freshman (n=269)	181 (67%)	88 (33%)	0.33
Sophomore (n=116)	68 (59%)	48 (41%)	0.41
Junior (n=145)	59 (41%)	86 (59%)	0.59
Senior (n=114)	52 (46%)	62 (54%)	0.54
Other (n=1)	0 (0%)	1 (100%)	1.00

*Combined Freshman and Freshman; n/a, Sophomore and Sophomore (1st year transfer), Junior and between Junior and Senior, Senior and Sixth Year, and changed post baccalaureate, faculty, non-degree and other all into other.

Table 6: Prior Experience with Library Instruction by Class Level. Source: 2017-2021 Student Satisfaction Survey Database.

Table 6 shows that as students mature they are more likely to have already seen library instruction. Levels of satisfaction with library instruction might be affected by previous experiences.

Discussion

Overall, the data from the Library study suggest high levels of usage and satisfaction with library services. For all questions asked of students after library instruction, the median score is "Agree (4)" for positive questions and "Disagree (2)" for the single negative question. In addition, a statistically significant increase in comfort level with library services occurs after library instruction. For chat services, the average rating by students is higher than 3.5/4.0 for all years.

We can also see a spike in students using the chat services for the library in April of 2020, which may be a result of going online because of Covid-19. In other years, the spikes in usage are around September for the Fall semester and February-March for the spring semester. Note that usage of chat services was already higher for the 2019-2020 year than in previous years before the Covid-19 pandemic began.

These results represent a fraction of the data available from the library. Future work will include analysis of variance on tables to determine statistical significance and time series analysis.

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