Hillman Library Fourth Floor Usage and Space Analysis

Summary of Findings

The remodeled Hillman Library 4th floor space has been popular with students since its open in September 2018. The Assessment and Quality Assurance department used surveys; flipcharts; statistics for bookings, card swipes to rooms, and group study room screen logins; and observation to note the following:

- 70% of students who visit Hillman's 4th floor spend three or more hours per each visit.
- 88% of surveyed students use the library to study alone or for quiet study. 81.5% come to the 4th floor for that reason.
- Students do not come to the library very often for traditional services, such as borrowing a book, finding a journal article, or seeking reference help (around 20% of respondents in our survey listed these activities).
- Afternoons and early evenings are the busiest times with average occupancy of the open single seat areas around 65%. During midterms and finals on the 4th floor, we note occupancy levels reaching the mid 80 to lower 90 percentages based on time and day of week.
- Individual carrels are the most popular seating arrangement, with occupancy levels reaching over 100% during busy times. When students double up, it can add to the noise level, however.
- Lounge chairs, placed around the perimeter of the floor are not a popular choice with students (with occupancy levels not exceeding 30% in busy times).
- Study rooms available only to graduate students also see increased usage during the afternoons and early evenings, especially during midterms and finals, reaching occupancy highs of 51%.
- Group study rooms on the 4th floor are booked 38% more often than the study rooms on the other floors of Hillman Library. The rooms at the end of the 4th floor hall (406-409) are the most booked rooms on the floor.
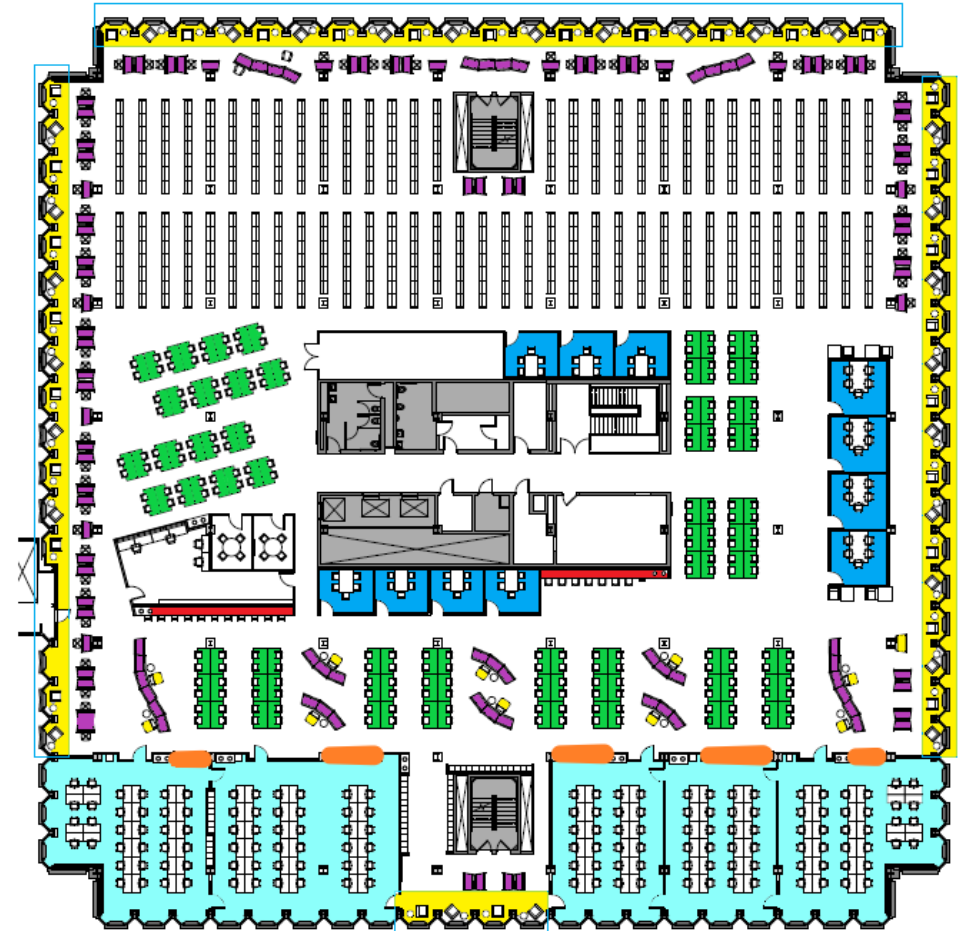- Excessive noise on the floor is a common complaint among patrons.

Figure 1: Fourth Floor Layout

| Key | Lounge seating | Group Study | Adjoining study rooms | Tables | Bar | Carrels | Embedded wall seating |

Activity

Activity on the fourth floor was determined through a Qualtrics survey and confirmed with in-person observations. The majority of students surveyed spend more than an hour on the floor. Approximately 48% spend 3-5 hours, with 21% staying for more than 5 hours. Only 5.74% spend less than an hour on the floor. The survey asked patrons about reasons for visiting Hillman, and, if they visited 4th floor, activities they engaged in on that floor. Please note that the 238 students who completed the survey could choose more than one activity. Studying and working on coursework are the most popular activities at the library. Traditional library services are not highly sought by students. This shows a need for greater promotion amongst the student body about library services, such as reserves and support from a subject specialist. The table below uses the data from the Qualtrics survey and is coded to show the categories of activities in which students participate while on the 4th floor and in general at the library.

Activity on 4th Floor	Percentage	Reason for Hillman Visit	Percentage
Study/Coursework Activities			
Study alone	81.51	Quiet study	87.82
Use laptop or tablet or other electronic device	45.8	Use printer or scanner or copier	37.39
Use group study room	38.66	Group work	35.71
Use printer	38.24	Use library computer or laptop	13.45
Study with friends	34.87	Meet with tutor	4.2
Use a large screen monitor in the group study room	15.55		
Relaxation			
Eat	19.75	Meet friends	24.37
Relax	17.23	Get food or something to drink	18.07
Sleep	9.66	Relax	11.76
Library Services			
Look for a book	4.62	Find library books	10.08
		Find course materials required by instructor (course reserves)	7.56
		Find journal articles	4.2
		Attend a training session workshop class or exhibit	3.78
		Get IT help or ETD support	1.26

Table 1: Student Activity (Data Source: Qualtrics Survey)

Individual Seats

In the Fall 2018 term, we manually recorded occupancy levels for 39 days by touring the floor at set times and noting occupancy. Mornings tend to be the least busy time in general. Throughout the term we noted seven mornings, 31 afternoons and 26 evening with occupancy levels of over 70%. We observed that there were two mornings, 13 afternoons, and one evening when tall and short carrels were fully occupied. Ten of those high occupancy afternoons occurred after October 22, showing that students use the library more after midterms. Having long tables, and at times, having more than one person in a carrel, can lead to noise in what is designated as a quiet study floor. Noise was noted by patrons in our Qualtrics survey, in flip chart comments, and in our in-person observations.

The Qualtrics survey produced the following rank of patron preferences for seating options on the 4th floor:

1. Individual carrels (single desks)
2. Tables with dividers
3. Group study rooms
4. Dissertation/graduate writing room
5. Tables without dividers
6. Lounge Chairs
7. Embedded wall seating
8. Bar / counter seating

This ranking corresponds with observational data, shown in three tables on the right.

The color-coded table to the right shows the observed average occupancy of the single seat areas over the month, time of day, and day of week.

Month - Average occupancy of 'single' seat areas

Month of Date	Bar	Lounge chairs	Short carrels	Tables	Tall carrels	Wall
September	20.91%	19.69%	56.09%	37.96%	63.86%	8.46%
October	18.49%	18.45%	53.06%	29.46%	60.47%	4.08%
November	11.98%	16.89%	45.83%	27.50%	57.56%	5.00%
December	37.80%	33.52%	78.17%	48.56%	75.42%	12.38%

Time of Day - Average occupancy of 'single' seat areas

Time	Bar	Lounge chairs	Short carrels	Tables	Tall carrels	Wall
morning	8.17%	11.90%	32.05%	14.30%	43.86%	1.54%
afternoon	27.72%	33.74%	84.40%	46.93%	81.69%	10.77%
evening	26.93%	17.75%	53.77%	41.01%	64.09%	7.62%

Day of the Week - Average occupancy of 'single' seat areas

Weekday of Date	Bar	Lounge chairs	Short carrels	Tables	Tall carrels	Wall
Sunday	36.36%	22.55%	68.56%	44.74%	77.54%	6.36%
Monday	23.16%	27.14%	67.65%	40.35%	73.73%	11.76%
Tuesday	26.17%	28.33%	66.15%	38.61%	66.79%	10.00%
Wednesday	20.54%	28.86%	73.21%	38.84%	76.99%	7.14%
Thursday	15.83%	16.00%	52.22%	31.49%	63.57%	6.67%
Friday	5.90%	14.52%	37.04%	19.99%	42.38%	2.22%
Saturday	15.97%	11.63%	33.80%	24.80%	42.57%	3.33%

Figure 2: Fall 2018 Single Space Observed Occupancy (Data Source: Headcounts)

Measure Values
0.0154 — 0.8440

Group Study Areas

There are 11 group study rooms on the 4th Floor.

In the Fall 2018 term 408, 407, 409, and 406 were most frequently booked by patrons using our on-line booking system. These are the rooms that are directly observable as students exit the hallway on the Schenley Park side of the building. They are also the first 4th floor rooms in the LibCal room scheduler. Rooms 424, 417, 425, 426 are the least booked, and also at the bottom of the list of rooms in the LibCal scheduler. The lower usage of these rooms may be due to the location in the LibCal list, or it may be because these rooms face the tables with dividers. This may make the rooms less desirable because they appear to be less private, facing a full range of tables with dividers directly opposite. The table to the right illustrates usage based on LibCal booking data (sorted by total room bookings).

Room	Total Bookings	Unique Users	Time Available (in minutes)	Time Booked (in minutes)	Avg. Duration
408	925	712	135,630	73,110	79
407	920	684	135,630	73,500	80
409	919	707	135,630	74,850	81
406	906	685	135,630	77,970	86
415	890	714	135,630	76,410	86
417	877	677	135,630	71,430	81
416	866	655	135,630	72,840	84
424	853	662	135,630	72,720	85
425	836	665	135,630	71,400	85
426	835	645	135,630	68,250	82
423	821	634	135,630	72,870	89
Total	9,648	7,440	1,491,930	805,350	Total

Table 2: LibCal Bookings

Based on Solstice data, which records logins to the screens in the study rooms, the group study rooms were booked less than half the time the screens were in use. Students may see that the room is empty; and because the screen shows the next scheduled appointment, they may use the room. Questions that we have about this behavior that will need further analysis: do students just use the room without booking because they don't realize that they should schedule the room (even if it is free), or do students look for open rooms because they have used all their booking time for the month (two one-hour slots a day/week and six one-hour slots a month)?

Booked	Group Study 406	Group Study 407	Group Study 408	Group Study 409	Group Study 415	Group Study 416	Group Study 417	Group Study 423	Group Study 424	Group Study 425	Group Study 426
False	66	75	63	84	63	77	74	60	53	84	81
True	52	67	68	74	70	62	46	54	35	40	57

Figure 3:Solsitice Data for 4th Floor Group Study Rooms

Average daily logins to the study room screens for the Fall 2018 term show that rooms 409, 408, 407, 426, and 416 are the most frequently used rooms. They are followed in order by: 425, 415, 423, 406, 417, and 424.
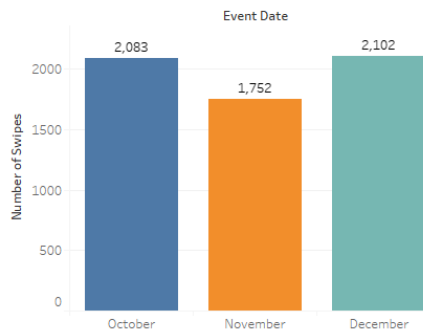
Solstice and LibCal booking data confirm that for the Fall 2018 term, 407, 408, and 409 are the most popular group study rooms on the 4th floor.
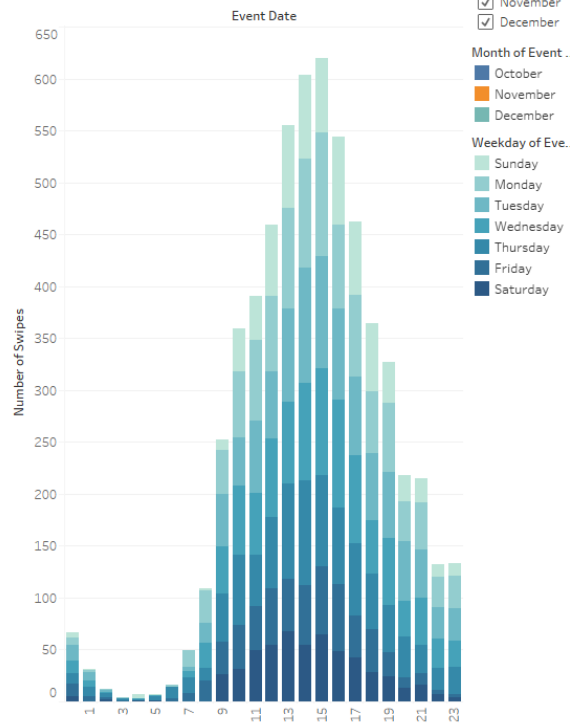
Graduate Study Rooms

Occupancy for graduate study rooms was recorded over the same 39 day period in the Fall 2018 term as single space seating and group study room occupancy.

Of the graduate study rooms (only accessible with ID), 403 is the busiest. That may be because the entrance to 403 is in the middle of the 4th floor space. Also, the entrance to 402 is only possible if you enter 403 or 401. This may limit the usage of 402. 404 and 405 get heavy usage because they are open rooms. 403 was filled to capacity for the last recorded observations in December 2018.

Average occupancy of large study rooms over the Fall 2018 Semester

Time	Date	Avg. 401 %FULL	Avg. 402 % FULL	Avg. 403 % FULL	Avg. 404-405 % FULL
afternoon	10/26/2018	0.00%	10.00%	15.00%	16.00%
	10/27/2018	0.00%	0.00%	5.00%	20.00%
	10/28/2018	5.00%	15.00%	60.00%	80.00%
	11/12/2018	5.00%	0.00%	40.00%	46.00%
	11/13/2018	15.00%	0.00%	40.00%	60.00%
	11/14/2018	15.00%	5.00%	30.00%	66.00%
	11/15/2018	10.00%	10.00%	40.00%	32.00%
	11/16/2018	10.00%	5.00%	20.00%	20.00%
	11/17/2018	0.00%	0.00%	35.00%	26.00%
	11/30/2018	5.00%	0.00%	45.00%	24.00%
	12/3/2018	5.00%	10.00%	75.00%	80.00%
	12/4/2018	10.00%	5.00%	55.00%	88.00%
	12/5/2018	15.00%	10.00%	40.00%	80.00%
	12/6/2018	10.00%	10.00%	45.00%	76.00%
	12/7/2018	15.00%	20.00%	80.00%	88.00%
	12/8/2018	10.00%	45.00%	100.00%	92.00%
	12/9/2018	60.00%	80.00%	100.00%	98.00%
evening	9/16/2018	0.00%		0.00%	24.00%
	9/17/2018	0.00%	0.00%	0.00%	28.00%
	9/18/2018	5.00%	0.00%	0.00%	22.00%
	9/19/2018	0.00%	0.00%	0.00%	44.00%
	9/20/2018	0.00%	0.00%	0.00%	28.00%
	9/21/2018	0.00%	0.00%	0.00%	0.00%
	9/23/2018	0.00%	0.00%	0.00%	56.00%
	9/29/2018	5.00%	0.00%	0.00%	16.00%
	9/30/2018	0.00%	0.00%	10.00%	48.00%
	10/6/2018	10.00%	0.00%	0.00%	2.00%
	10/7/2018	5.00%	0.00%	20.00%	24.00%
	10/8/2018	5.00%	0.00%	10.00%	66.00%
	10/9/2018	10.00%	0.00%	15.00%	76.00%
	10/10/2018	0.00%	0.00%	15.00%	68.00%
	10/11/2018	5.00%	5.00%	25.00%	38.00%
	10/12/2018	0.00%	0.00%	0.00%	2.00%
	10/13/2018	5.00%	0.00%	0.00%	10.00%
	10/14/2018	2.50%	0.00%	5.00%	17.00%

Figure 4: Fall 2018 Large Study Room Observed Occupancy (Data Source: Headcounts)

Number of swipes to Hillman 401 and 403 (access granted only), by month

Number of swipes to Hillman 401 and 403 (access granted only), by hour
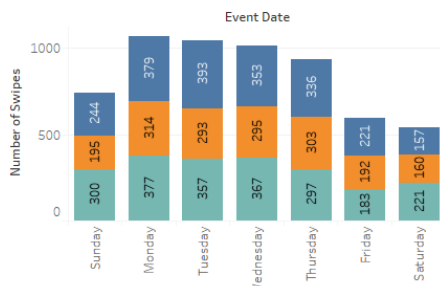

Month of Event ..
- ☑ (All)
- ☑ October
- ☑ November
- ☑ December

Month of Event ..
- October
- November
- December

Weekday of Eve..
- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Number of swipes to Hillman 401 and 403 (access granted only), by month and weekday

Figure 5: Graduate Access to Study Rooms via Card Swipes

Rooms 404 and 405 are open to the public, and those rooms were used heavily in the same busy patterns that the single space areas were used. At finals time, 404 and 405 were filled almost to capacity.

Recommendations

Since students prefer individual carrels, and the primary purpose in coming to the library is to study alone, more accommodations matching this behavior should be made available to them, especially on floors that are designated as quiet floors. In both the survey and the flip sheets, noise level was a concern; and the layout of the floor with group table space may be a contributing factor, making it easier for students to gather and talk. During midterms, finals, and other busy afternoon periods, students will buddy up at individual carrels, which can add to the noise on a floor designated as quiet.

We should also note flow of traffic through the floor. Afternoons are busier than mornings or evenings, especially in the times around midterms and leading up to finals week. This means that afternoons should be considered prime time for programming or additional support services. Perhaps roving reference support (setting up a temporary reference or service spot) might be useful, especially during those busy times when students may need help, but don't want to go to the ground floor of Hillman to get that help. It might also be useful to have a visible library presence on the floor to remind students to adhere to library policies. Students have complained about noise and students vaping on the floor.

As can be seen from the survey on activity, students come to Hillman mostly for the study space. Traditional library services are not as sought out as much as the space. We should do a better job of promoting the services and resources that the library has to offer, such as digital services, reserves, and subject specialists.

Appendix: Data Collection

Collection Method	Data Collection Time Period	Data Collected
Qualtrics Survey	11/28/2018 – 1/15/2019	238 responses
Headcounts and in-person observations	9/17/2018-12/9/2018	39 observations
Patron comments via flip charts	9/17/2018-11/17/2018	25 sheets with short comments
Solstice	10/02/2018-12/31/2018	logins counts
LibCal Bookings	8/26/2018-12/15/2018	bookings counts