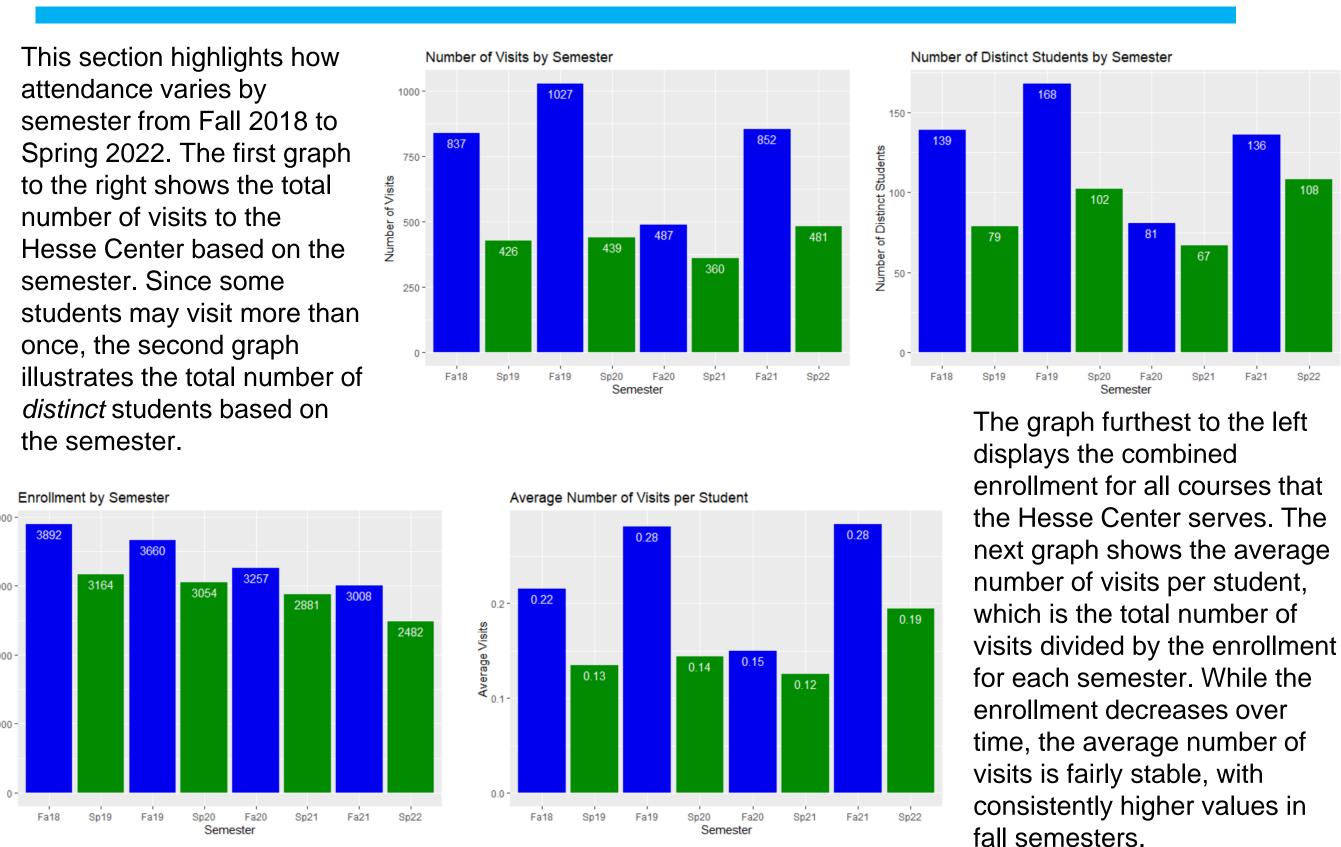


Analysis of Attendance Trends at the Valparaiso University Hesse Center Nate Izewski

Introduction

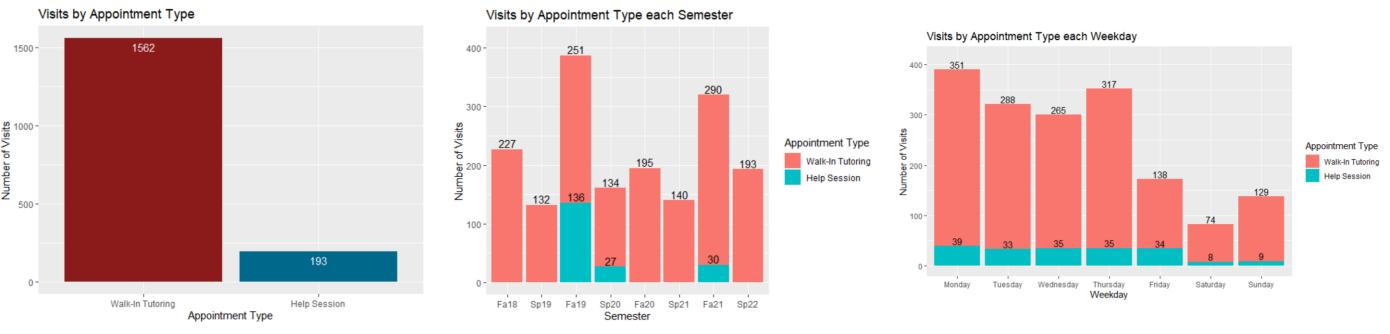
This project seeks to help the Valparaiso University Hesse Center optimize its resources to better support students in need of academic assistance. Located in Gellersen Hall, the Hesse Center offers help sessions and walk-in tutoring for students in mathematics, statistics, engineering, and physics courses. The data for this project was obtained from Laura Sanders, the Director of the Hesse Center. Before entering the Hesse Center, students are required to swipe in with their Valparaiso University student ID card and provide information about their visit. After receiving tutoring, they are instructed to swipe out. This process allows information such as the course and the time of day to be collected. By analyzing attendance trends based on the semester, appointment type, course, weekday, and time of day, the Hesse Center can be better prepared to meet the needs of students.

Attendance by Semester

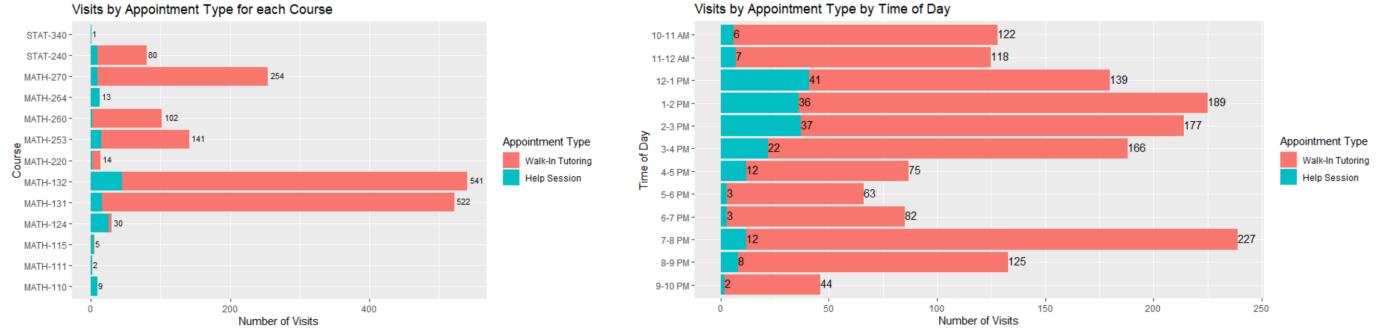


Attendance by Appointment Type

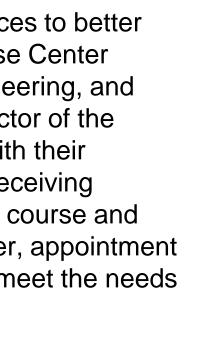
This section analyzes attendance by appointment type: walk-in tutoring or help sessions. The data here is restricted to only mathematics and statistics courses. Walk-in tutoring refers to when students visit the Hesse Center during any of its available hours, while help sessions are organized at specific times for students in specific courses to get help. During the 2018-2019 and 2020-2021 academic years, the help sessions were not held in the Hesse Center, so there are not help session attendance records from those years.

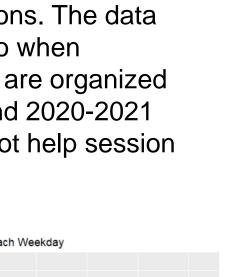


The graphs above demonstrate that overall there are significantly more students visiting the Hesse Center for walk-in tutoring than for help sessions. However, the bottom-left graph shows that for certain courses, such as MATH-124 (Finite Mathematics), students tend to visit the Hesse Center primarily during the specific help session times. The bottom-right graph shows that most help sessions are held during the afternoon. Yet 7-8 PM has the most walk-in appointments, so it may be beneficial for the Hesse Center to consider offering help sessions during that time range.



Faculty Advisor: Professor Tiffany Kolba





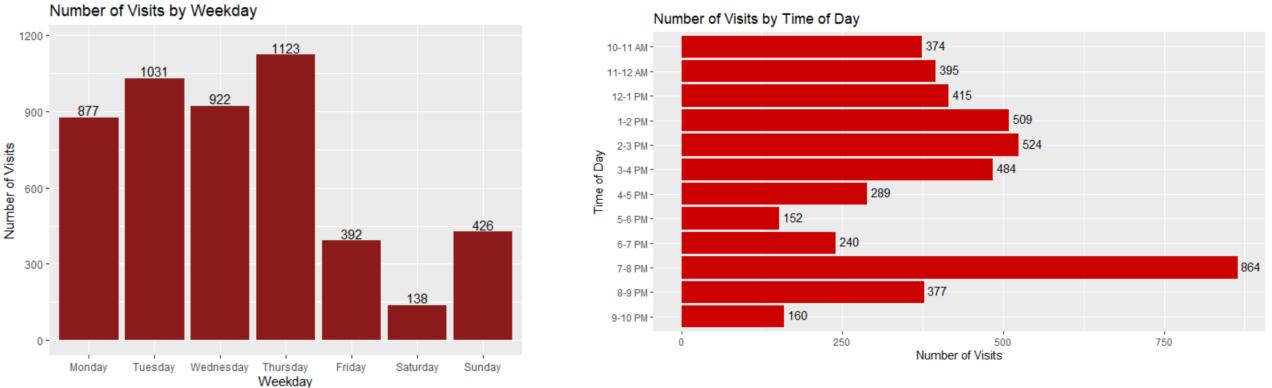
Attendance by Course



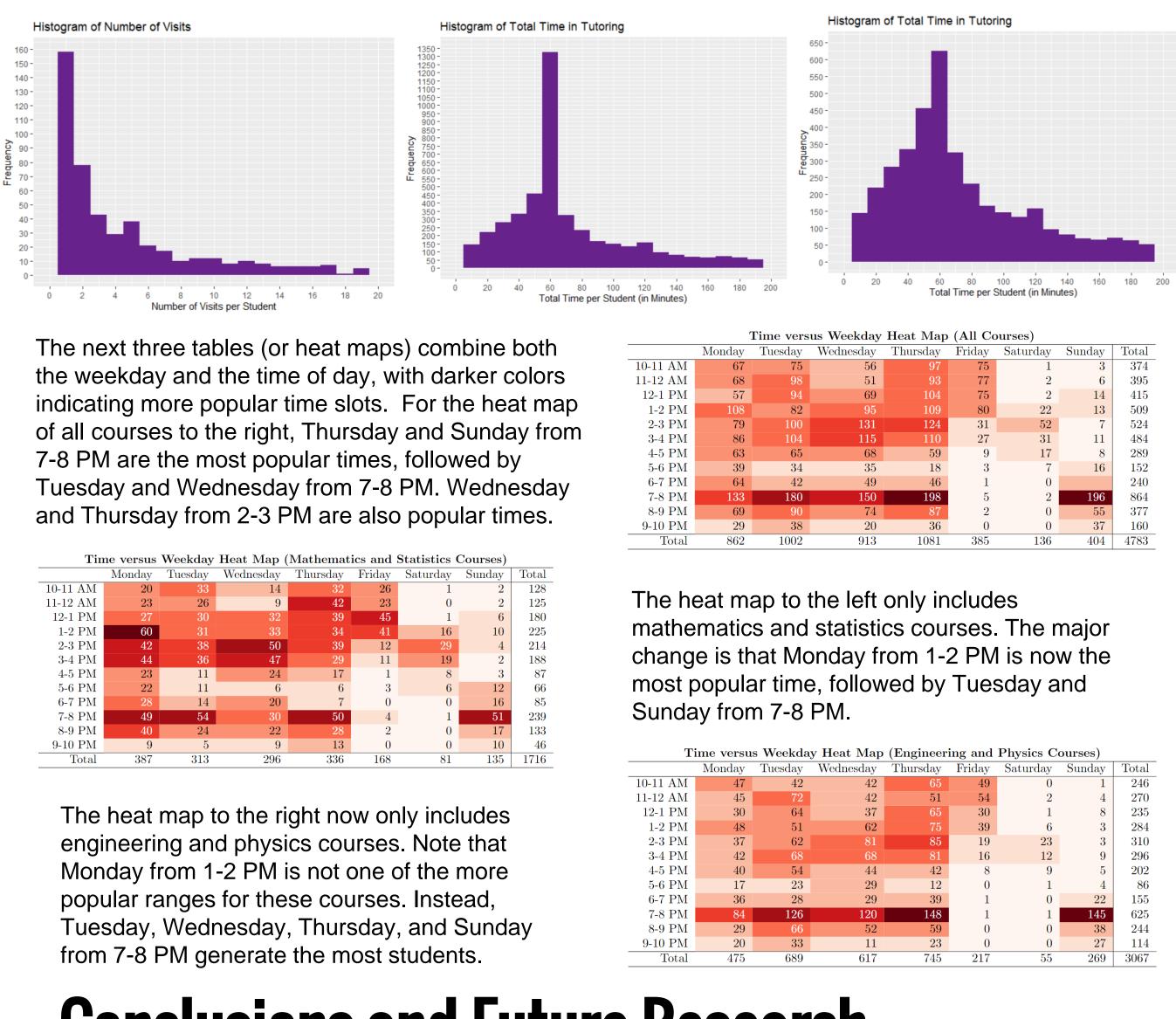
clearly generates the highest values, while for electrical and computer engineering, no single course stands out the most and no ECE courses have more than 65 total visits to the Hesse Center. GE-109 (Mechanics-Statics) generates the most visits for general engineering courses, while ME-209 (Mechanics-Dynamics) and ME-270 (Thermodynamics I) generate the most visits for mechanical engineering courses. PHYS-141 (Newtonian Mechanics) generates the most visits for physics courses, and is the single most popular course at the Hesse Center, though PHYS-151 (Newtonian Mechanics -Honors) has the highest number of visits per student due to lower enrollment. The Hesse Center can utilize this information to better prepare tutors for the courses that they are most likely to help students with.

Attendance by Weekday and Time of Day

This final section analyzes attendance trends by weekday and time of day, aggregated across all courses and across Fall 2018-Spring 2022. The first graph below illustrates that Thursday is the busiest day, followed by Tuesday, Wednesday, and Monday. The second graph below displays attendance by time of day, restricted to the time range 10 AM to 10 PM, the standard hours for the Hesse Center. Note that the time of day is determined by when students swiped into the Hesse Center, but not necessarily when they left. The most popular times are 7-8 PM, 2-3 PM, 1-2 PM, and 3-4 PM. While the Hesse Center should provide effective tutoring at all times during its hours, special focus should be placed on preparing tutors for the more popular days and hours. It would also be beneficial to offer help sessions during the hours that attract more students.



The first histogram below displays the distribution of the number of visits per student, and indicates that many students only attend the Hesse Center once and never return. The next two histograms display the distribution of how long students spend in the Hesse Center during a visit. The middle graph includes a large spike at 60 minutes, which is what the Hesse Center software automatically inputs as the amount of time when a student forgets to swipe out. The graph to the far right excludes those who did not swipe out, and hence is a more accurate assessment. Most students spend between 50 to 70 minutes at the Hesse Center during a single visit.



	Monday	Tuesday	Wednesday	Thursday	Friday	1
10-11 AM	20	33	14	32	26	
11-12 AM	23	26	9	42	23	
$12-1 \ \mathrm{PM}$	27	30	32	39	45	
1-2 PM	60	31	33	34	41	
$2-3 \ \mathrm{PM}$	42	38	50	39	12	
3-4 PM	44	36	47	29	11	
4-5 PM	23	11	24	17	1	
$5-6 \ \mathrm{PM}$	22	11	6	6	3	
$6-7 \ \mathrm{PM}$	28	14	20	7	0	
7-8 PM	49	54	30	50	4	
$8-9 \ \mathrm{PM}$	40	24	22	28	2	
9-10 PM	9	5	9	13	0	
Total	387	313	296	336	168	

Conclusions and Future Research

Though enrollment has dipped, both Fall 2021 and Spring 2022 had a high average number of visits to the Hesse Center per student, showing that individuals continue to find the Hesse Center a valuable resource for academic assistance. Walk-in tutoring appointments have been more popular than help session visits, but a targeted approach to offering future help sessions may increase attendance. The Hesse Center can focus on training tutors for the courses that generate more students and consider offering help sessions for those courses. Monday through Thursday and Sunday from 7-8 PM are popular times for students, as well as Monday through Thursday from 1-4 PM, so the Hesse Center can be sure to staff adequate tutors during those times. Future research could survey students to learn their views of the Hesse Center and understand why some students attend the Hesse Center once and do not return. Survey feedback could be used by the Hesse Center in its continual effort to improve to better meet the tutoring needs of students.