

Fitness and Recreation Center Usage

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Abstract

The Fitness and Recreation Center on campus is a pinnacle point on campus meant for students to gather and form communities, student's use the recreation center not only for physical health but also for mental health/rest. The center has a variety of different departments and for the benefit of the students we want to make sure these departments are the best they can be. To find out what the students like and dislike we sent out a survey to discover students' favorite departments/activities. After analyzing the data we can use this information to plan more events in the bigger departments and focus on marketing and growing the smaller ones. We can also use these results to potentially grow the recreation center itself by replacing old equipment with new equipment that students request

Introduction

In 2011 Texas Woman's University opened up two brand new buildings, the Anne Stuart Science Complex and the Fitness and Recreation center. At the time the recreation center was in the basement of a pre-existing building with only a handful of treadmills and weightlifting equipment. At this time the recreation center had to draw in extra revenue to grow so they had a special membership for people who were not affiliated with the university, this membership no longer exists though. With the growth of the recreation center now they have a whole fully functioning building and in March of 2022, they opened a new section of the building exclusively dedicated to student gaming called the Gaming Lounge. With growth comes an influx of new people and to continue growth you need more data.

The Texas Woman's University Fitness and Recreation Center is one of the most popular places on campus filled with students from all over the campus participating in a variety of activities. The recreation center not only has a gym for physical health but also has

workout/movement classes, an indoor court for intramural and recreational sports, an indoor pool for swim classes and recreational swimming, as well as a gaming lounge with gaming PCs, gaming consoles, and other games for students to use. Since the facility offers so many different activities, in turn they also attract students with a variety of interests. Students come to the recreation center to workout or attend workout classes, play in open recreation sports or intramural leagues, swim, climb the rockwall, and play in the gaming lounge. With the wide variety of students, surveying them and analyzing their response would provide great data and information. We could potentially use this information to grow the areas students are most interested in and focus more marketing on the areas people don't know about or are not as easily drawn to. We could also use this data to potentially show the most popular times of the gym as well as the ages of students who attend so the center can cater their events for those times or ages.

Using this data to grow and plan the future of the recreation center is important because these places are hubs for students to not only take care of their mental and physical health but a place to build connections and grow communities not only within the recreation center but outside of it and around campus as well. Focusing on student health is one of the main roles of a college campus and promoting college recreation and student gyms can promote mental health and in turn promote academic success (Sanderson, 2017).

Since the recreation center is an important part of campus with a lot of people, we centered our research on it. We wanted to see first hand the range of people who frequent the recreation center and if we can draw any valuable conclusions from our data to potentially help the center reflect and grow.

Review of the Literature

Impact of Collegiate Recreation on Academic Success

This paper talks about the importance of physical and mental health on a student's success in school as well as their general wellbeing. The importance of student's socialization is also discussed in this paper stating, "social integration occurs through informal peer group associations, semi-formal extracurricular activities, and interaction with faculty and university administrators." (Sanderson, 2017). This is relevant to our research because we want to use student feedback to grow the center in the direction that the students want because the center is ultimately theirs.

The Activities Recreational Center (ARC) Usage Frequency by Each Class and Factors Behind Why.

This paper goes into talking about the reconstruction of a student recreation center at the University of Illinois. The school did a whole reconstruction on the fitness and recreation center and wanted to see how the usage would be by the students with the new and improved recreation center. This paper relates to our research because we wanted to see the student usage of different departments at the Texas Woman's University recreation center. Would adding new departments expand student usage of the TWU recreation center?

The Impact of College Recr The Impact of College Recreation Center Reno Eaton Center Renovation on Ovation on Overall Participant Utilization and Frequency.

This paper talks about the 2 year renovation that happened at Wright State University recreation center and the impact it had on the students. They talked about the ways they collected

the data through surveys and they were able to see the students' usage of the new renovated recreation center based on students swiping their ID to get into the recreation center. This paper supports our idea of how we were able to collect data which was through surveys and it Similar to what we were looking for in our research which was the usage of the different departments at the recreation center.

Assessment of Motivation and Interest in Outdoor Recreation Activities

This research paper supports the importance of social interactions among students between friends, group members, or classes. These social interactions thrive in an informal environment like a recreation center or event. So students who participate in outdoor recreation activities are motivated by companionship. This backs up the importance of community and social interaction provided at a college recreation center.

An exploratory study of student satisfaction of the Rowan University Recreation Center.

This research paper talks about the study of the student satisfaction with the Rowan University Recreation Center. The study used participants to see how satisfied they were with the recreation center. Gathering this information they were able to figure out that the students who use the recreation center were very satisfied with it and very involved with it. This is related to our study because we wanted to see which department was being used the most which is similar to student satisfaction of the recreation center. We are allowed to see which area is the most used and in essence students are probably more satisfied with that certain department.

Methodology

Participants

The Participants were students from Texas Woman's University. These student's classification ranged from freshman to graduate students. The gender of these students were noted as both female and male, while students aged from 17 - 50 years old. The main focus for this study were students who attended the recreation center from October 10th, 2023 through October 31st, 2023.

Data collection and methodology

The main focus of this study was to find out the overall participants usage of the recreation center's different program areas. (Note that our data does not represent the full population of students who use the recreation center, just those who filled out the survey). We started off by creating a survey that could identify 3 main questions related to our main focus. We used google forms to create an 8 question survey. The questions included in the survey were:

1. First Name
2. Last Name
3. TWU email
4. Age
5. Classification
6. On Average how much time do you spend at the fit and rec center on a normal week?
7. What time of day do you like going to the rec center the most?
8. Which program do you like doing the most?

The last 3 questions, 6-8 helped us answer our main focus question so these were the most important and impactful questions. A survey was used because we felt like it was the easiest and most effective way to gain respondents/participants for our study, it is also very easy for students to use and fill out. We took this survey and distributed it to the faculty at Texas Woman's University recreation center. From there we had a QR code students could scan to fill the survey out since the survey was online. This method wasn't the most effective as we only got about 20 responses from the QR post at the recreation center. We ended up switching our tactics and went in personally to the recreation center to collect data from students by waiting at the front for students to enter. We did it this way so that it didn't create a bias on program area (activity), therefore we had no idea what they were coming into use. Once we got enough response we closed the survey and started the data cleaning process. We put the data gathered into an excel file and were able to see the responses more clearly and align with each other in the correct column. We cleaned the data, removing duplicates or responses that were not valid due to the person not being a student or making a mistake in the questionnaire. Once we did that it brought our total response from 81 to 77. With this we were ready to send this over to different softwares to find our results.

SQL procedure

Structured Query Language also known as SQL is a query language we used in our research. We ran certain queries to look at specific results within a table before we made graphs of these results. SQL allowed us to look up averages, specific names, and specific answers as their own table. We also put the data into SQL to have easier use of it which then allowed us to

connect to other software such as tableau. The way we did this was by creating a database, then exporting the excel file into that database that created a table.

R procedure

R is a programming language for statistical computing and graphing. In this project I (Sarah) used RStudio because it has the capability to take massive amounts of data and control it or change it in a user-friendly system. So with the same excel sheet that was used for SQL I uploaded the data into RStudio to create graphs and visualize the data. When data is uploaded to RStudio you have to change certain data types to different ones to use specific charts, so for example if you want to graph a character data type you can't use a normal bar plot and instead you have to change the type to match the types the graph accepts.

I made a histogram of the ages of the students that went to the recreation center and since age is an integer data type I didn't have to change anything and it displayed on the first try.

We also wanted a chart of the student's favorite activity so I had to change the data type of the activities from character to factor in order to create a chart of the results. You can do this by using the following code:

```
> Fitness_and_Recreation_Survey_Responses_NEW$`which one do you like doing the most?`<- factor
(Fitness_and_Recreation_Survey_Responses_NEW$`which one do you like doing the most?`)
```

The first part of the code is calling the data you want to change and the 'factor()' function is the function that actually changes the data to a factor. I also created a bar chart of the times of day that students enjoy going to the gym the most, which again required me to change the data type from character to factor in order to graph.

When graphing the data in Rstudio you have to specify the tile and axis names of the graph or the graphs will be harder to read. You can specify the title of the graph by using:

main='title of the graph'. You also specify the name of the axis in the same way but instead of using main you use 'xlab' for the x-axis and 'ylab' for the y-axis. You can also add other features like colors and percentages to your graphs as well.

Tableau procedure

I (Jonathan) used MySQL to connect to Tableau. Once connected to Tableau with the data it was easy to start making a visualization. The first graph that was made was a side by side bar graph titled "favorite activity by classification". The way I was able to create this graph was by dragging the dimension "favorite activity" and "classification" over to the column shelf. Once I did this it displayed an axis for the bottom and top. Next I added the measure called "fitness_and_recreation_survey" to the row shelf. This measure was already set to "CNT" which stands for count and displayed the sum for each classification under the corresponding activity. I then dragged the "age" measure and added it to the tooltip section in the mark area. I changed the measure from count to average and displayed the average age for each workout for each classification listed in the graph which can be seen in the tooltip. I then added the "favorite activity" dimension to the filter section that way anyone viewing the worksheet could filter to see a specific category of activity only or desired ones they choose. Last thing I did was change the color of the bars on the graphs and added a title.

The next graph I did was a pie graph based on hours and time of day. First I added a "fitness_and_recreation_survey" measure to the mark area, one for count and the other was to create the pie chart and change the size of the visualization. After I added the "average time" measure twice to the mark area. One was for creating a certain color for the pie chart and the other was to show the different hour categories in the pie graph. I added "time of day" and

“classification” to the filter section so that the user using the graph on the front-end will then be allowed to filter specific things that are trying to analyze when using the pie chart. Other than that I added a title to the pie chart.

With the addition of these two charts in tableau it allowed us to analyze our results more specifically to see which classification from our data was using the recreation center the most or to see what the most hours was spent during which time of day. Tableau allowed us to answer more questions than our primary focus. It will allow us to expand on our research question especially if we wanted to do further research with this data.

Limitations

We had our survey open for approximately three weeks, while it was open it was optional for students to fill it out so even though a lot of people came to the recreation center only about 80 filled out the survey so it only represents a fraction of the whole population.

The survey itself had problems that we noticed either while the survey was open or after we closed it. The questions on the survey were originally open response rather than multiple choice so when students would fill the survey out they would all word their answers differently causing the data and charts to be irregular. Once we changed the questions to multiple choice our responses were uniform and easier to read, which caused us to have to clean the data later on so the irregular answers match the new uniform answers. We didn't change the answers themselves, we only changed the formatting and order.

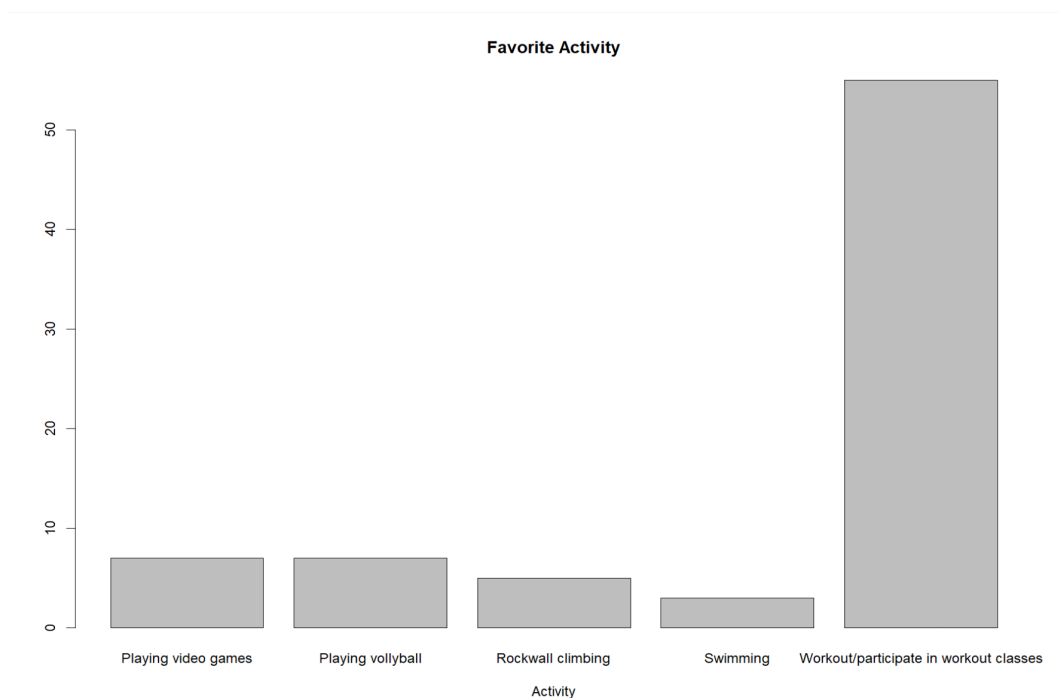
One of the questions we changed was the average amount of time they spend at the center in a week and the answers were 0-9 hours, 10-15 hours, 16-20 hours, and 20+ hours. Looking back on the results we should have split the 0-9 hours into two choices and those choices being

0-5 hours and 6-9 hours because 0-9 hours is the largest range and doesn't follow the intervals of the other answers.

One huge limitation we had was Texas Woman's University is majority populated with females since it is a female dominated school therefore most of our respondents were female and little male participants.

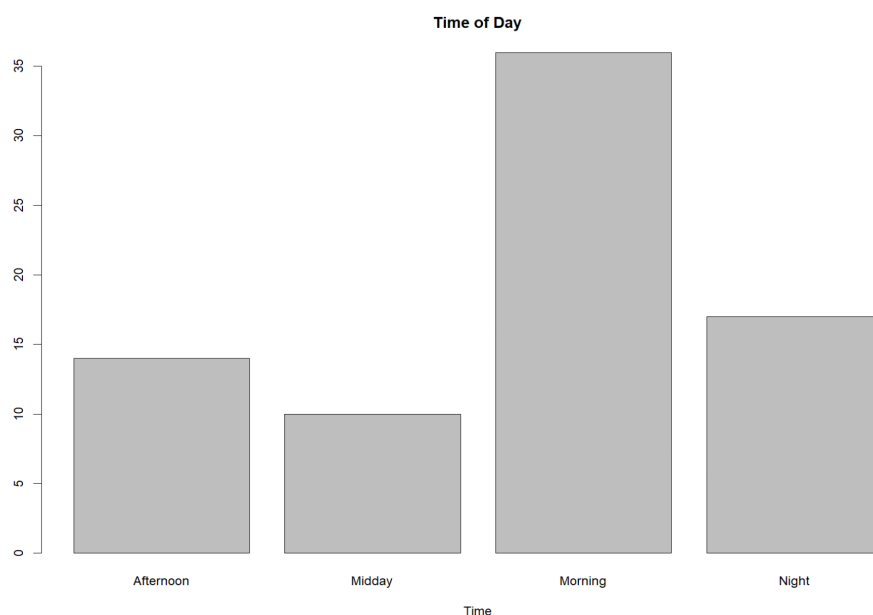
Results

Our main purpose of this survey was to determine the overall usage and popularity of the departments that are a part of the Fitness and Recreation Center. The departments are the center are fitness, outdoor adventures, intramural sports, the pool, and the gaming lounge. In our survey we asked what the student's favorite activity to do was at the gym and each answer corresponds with a department so in the same order we have working out/workout classes, rockwall climbing, playing volleyball, swimming, and playing video games.



These were the results of our survey when it came to this topic specifically, we can see that video games and volleyball are about the same, climbing is right under them, and we have swimming as the lowest number in terms of favorite activity. We can also see a drastic jump of almost five times as many more from video games to working out or participating in workout classes.

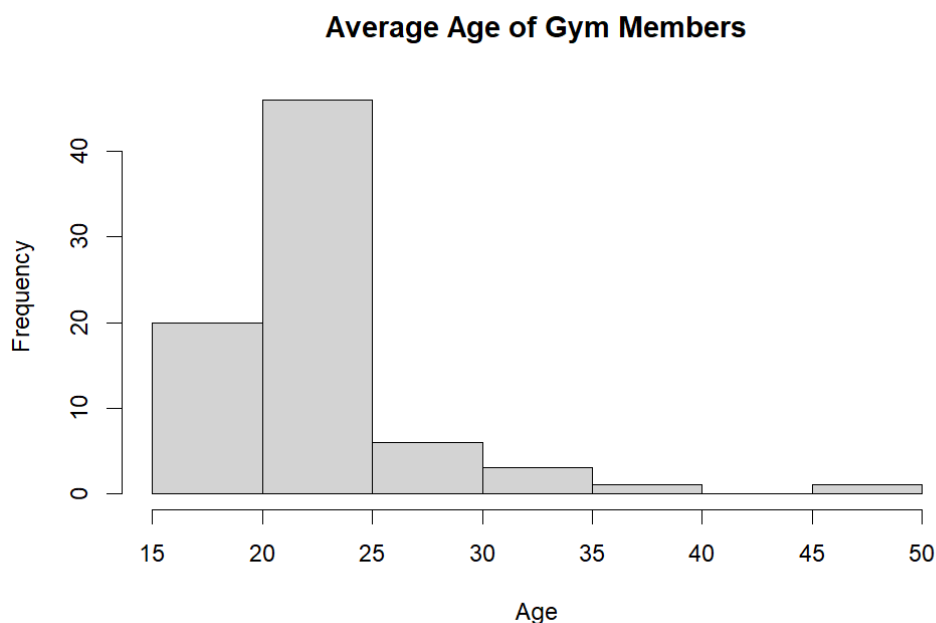
Another one of our questions we found important to ask is the time of day student's like going to the gym. Time of day is important because we can focus our energy on the rushes that come in while maybe doing things like cleaning or organizing during the downtimes of the gym.



In this graph we can see that morning is the most popular time which makes the most sense because students will try to go to the gym before class or start their days at the gym. We can also come to other conclusions based off this graph, for example, midday is the least popular because most classes are happening in the middle of the day from around 9am-2pm. The afternoon and night are pretty close together but night is probably more popular because students might want to end their days with the gym as a way to decompress. The popularity of night

shocked us originally because a lot of the recreation center's events are in the afternoon or night. But this survey was asking about favorite time and doesn't account for if they visit the gym multiple times a day.

The last question we found relevant or interesting to our results was our question about age. When you go to the recreation center you see a lot of college students but in the afternoon or early morning you will notice a handful of older people whether they be faculty and staff or older students so we included this as a question to possibly see any trends.



Even though we see massive numbers in the lower age range this is normal because it reflects the ages of an average college student but we are more interested in the fact that there is still a bit of the population that is 30 or above and we also have an outlier on the end of our histogram who is 50 years old. If we wanted to compute an accurate average of age we would have to exclude this outlier or it would skew our results.

Discussion

In summary our purpose of our research was to find out the overall participants usage of the recreation center's different program areas. We had a total of 77 participants after data cleaning that we used for our findings. Based on our results 71% of the participants favor workout/participation in workout classes, 9% favor playing video games, 9% favor playing volleyball, 6% favor rock climbing and the other 3% favor swimming. We can see that based on these results the usage from working out/participating in workout classes is way higher than any other program area/activity. This means that the most popular program area is working out and it's well used at the fitness and recreation center at Texas Woman's University. These results/findings matter because it allows the fitness and recreation center to focus its marketing strategies toward certain areas that are lower in participation. It also helps with planning events because it allows them to focus on the most popular program area so this in essence allows them to gain more participation for any event that has to do with working out. The results also matter because with the graph that displays favorite time of day, it shows that morning is the most popular time to workout. This matters because it allows the fitness and recreation center to plan those certain events or workout classes in the morning.

Our results do have some drawbacks on things we can't infer. The results don't account for the people who have more than one favorite program area or attend multiple areas in one day. It also doesn't account for everyone that uses the recreation center nor does it specify which gender. In the future we can hone in on possibly the specific workout equipment that is favored with the goal to clear out equipment that is less used and replace it with equipment that is more popular to cater to our student's wants and needs as well as certain working out classes that are most popular among students.

Reference

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