

**36-303A: Survey, Sampling, and Society**  
**Professor Brian Junker**

Nice job.

-BJ

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**Survey on CMU Undergraduates’  
Satisfaction with and Use of UC  
Athletic Facilities**

**Final Report**

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nice- thanks!

-BJ

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## **Section 1: Introduction**

### **Research Question and Motivation**

We completed a survey of the Carnegie Mellon University (CMU) undergraduate population's use of and satisfaction with the University Center (UC) athletic facilities. The athletic facilities are located in the UC and are often seen as a central gathering place for the entire university. The athletic facilities provide a venue for recreation and physical activity for all members of the university who possess a valid CMU ID card. We live in a time where healthy living and exercise are valued, and it was useful to find out how satisfied CMU students are with the athletic facilities in the UC. As members of the CMU undergraduate population, we wanted to know how people viewed these facilities, and potentially take action to improve them.

There are several questions that we studied to identify the use and satisfaction of the UC athletic facilities. We first asked questions about how frequently all of the UC athletic facilities were used. This told us which students utilize the athletic facilities based on specific demographic characteristics. As a result, we found out which facilities are the highest utilized ones, and were able to identify any problems dealing with over-crowdedness on these facilities. Additionally, we asked questions regarding the cleanliness of facilities. After that, we asked respondents about the effectiveness of equipment in these facilities. By asking these questions, we were able to identify problems with equipment and eventually hope to improve those problems by recommending replacements or including more detailed instructions. We also asked whether the respondents believed that the check-in process and locker rooms were effective. We concluded our survey by asking open-ended questions about any improvements that respondents would like to see implemented. We also asked an open-ended question about aspects of the athletic facilities that they are already satisfied with.

These questions served a general purpose, to determine whether CMU students are satisfied with the UC athletic facilities and how these facilities can be improved. By identifying potential problems, we have the potential to increase the satisfaction level of students and effectiveness of the facilities. Implementing these recommendations will eventually optimize facility use and satisfaction.

### **Citations to Literature on the Topic**

After doing some research, we found out that no surveys have been completed on the overall satisfaction and use of all UC athletic facilities. We also checked with the school newspaper, the Tartan and received the same answer. Finally, we approached the UC itself to ask if any research had been done on the use of their facilities. They, also, did not have any data on the UC athletic facilities. This presented us with a great opportunity to explore our topic, free from bias created from prior studies.

Based on research on the Carnegie Mellon University webpage, we found the following information that will enhance our study. The first floor of the UC features a gymnasium for

format of citations  
not as requested

basketball, volleyball, and badminton, as well as two racquetball courts, two convertible racquetball/squash courts, an eight-lane, 25-yard swimming pool and a diving pool. The second floor features the fitness and exercise rooms with a Cybex weight training circuit, stationary bikes, rowers, steppers, elliptical machines, and treadmills, as well as one squash court and an activity room for aerobics classes ("UC Fitness & Recreation - University Center"). This gave us the specific locations to include in our survey to students. Hours of operations are Monday-Friday from 6:00 AM-2:00 AM, and Saturday and Sunday from 9:00AM-2:00AM ("UC Fitness & Recreation - University Center"). Given the hours, we realized that students probably would not find the UC athletic facility hours as being a problem. Therefore, we decided not to ask about this topic on our survey. Students have the ability to reserve rooms in the UC for athletic purposes, such as the Activities Room and the racquetball courts ("UC Fitness & Recreation - University Center"). This gave us a unique aspect of the UC athletic facilities that we wanted to find out more information about. We were unsure whether students were familiar with the process and hoped to find out if we could make the process more efficient or easier for students.

citations  
not as  
requested;  
also not  
enough  
citations  
listed at  
end...

The following chart illustrates what equipment is available in each of the following locations. This gave us base numbers for what all was available, so we could base our recommendations accordingly.

#### **Weight/Cardio Room:**

Cybex Weight Training Circuit  
Stationary Bikes  
Rowers  
Ski Machines  
Steppers  
Treadmills

#### **Weigand Gym:**

2 basketball courts  
3 volleyball courts  
1 badminton court

#### **Activities Room:**

Group X-ercise classes held here  
Stability Balls  
Steps  
Indoor Cycling  
Yoga / Pilates Mats  
Kick Boxing

#### **Racquetball & Squash**

Two Racquetball  
One Squash  
Two Convertible Courts

Much can be learned from the survey results, especially because there was no valid research on this topic before. Not only will we see if operation of the UC athletic facilities satisfy the preferences of CMU undergraduate students, but also we will learn about specific details that can be acted upon and make the UC athletic facilities better. We will take all of our research, which is mostly presented on the UC webpage, and incorporate them into our survey. Our research presents data on operations, availability of equipment, and equipment regarding each facility in the UC.

#### **Quick Summary of Results from Section 4**

After sending out our survey to 1,320 students, we received 303 respondents who completed the survey. We also had 32 students view the survey, and 51 students begin the survey but not finish it.

There were many recommendations that we want to make to the UC. First and foremost, the biggest concern for students was the lack of space and the high waiting times for machines such as the treadmills, row machines, and weights. Another significant concern was regarding the check-in process. Many students felt that it was inefficient and that the paper wristbands were both a waste of resources and a hindrance while they were working out. Several students instead recommended having a card swipe mechanism at the door, stickers on clothing, or reusable wristbands. Based on the feedback that we received from the surveys, we are also recommending that the UC increase the number of televisions and implement a centralized speaker system for all the facilities.

We were pleasantly surprised with the number of students who were very satisfied with the cleanliness of the facilities as well as the equipment there. They felt that the equipment satisfied their needs and were effective. Also, many commented on the significant variety of options that the UC athletic facilities offered.

(A more detailed analysis and recommendation are given in section 4.)

## **Section 2: Methods**

### **Target Population**

Our target population includes all CMU undergraduate students who utilize the UC athletic facilities. Specifically, since we want to improve the UC athletic facilities, the majority of our sample should include students who actually use the UC athletic facilities on a regular or occasional basis, which does not include the other athletic facilities on campus.

In order to make conclusions about our target population, we will have to obtain a representative sample from all of CMU's undergraduate students. However, our focus will be on the CMU undergraduate students who actually regularly utilize or have used the UC athletic facilities because they will be the ones who actually know what improvements need to be made to these facilities.

### **Sampling Frame**

Our primary sampling frame is all of the students listed in the Carnegie Mellon C-book, an undergraduate student email directory. We understand that the C-book does not contain all CMU undergraduates, so some non-sampling error may be present. We will use the sampling frame to obtain a representative sample by assigning each undergrad student listed in the C-book a number, and picking our sample through a random number process. To get an equal representation from each undergraduate class year, we will execute the random number process four times (one for each year). This will be done through a random number generator, giving each student listed in the C-book an equal chance of being selected. Since we are only interested in undergraduates who use the UC athletic facilities, our sample will have to be relatively large to make up for those students chosen that do not use the UC

i.e. the sampling frame will contain many ineligible respondents

athletic facilities. The students that are chosen by the random number generator will then be sent an email, briefly explaining our intent and including a link to an online survey through QuestionPro.com.

### Sample Design/Methods

The sampling scheme that our group has decided on is a simple random sample without replacement. A simple random sample with replacement would not be useful to us because we do not want to double count people's responses as it would skew our data. This means that once a respondent has been randomly selected to participate in our survey, they will not have a chance of being selected again.

We considered doing a stratified random sample; however, we realized that we would not gain any useful information by stratifying our sample. We first considered stratifying our sample by class year. We then realized that knowing how the freshmen utilize the gym in comparison to the seniors does not benefit our insight of the UC gym facilities. We are more focused on those who actually attend the gym on a regular basis regardless of what year they are at CMU. We then considered stratifying our sample by men and women, but came to the same conclusion in that we want to find out overall problems and satisfaction levels from all CMU undergraduate students who utilize the UC gym.

Therefore, we have concluded that a simple random sample without replacement will be most ideal for our project. Based on what we are striving to find out, we feel that this method will give us the best sample and the most accurate results.

### Sampling Size

In order to calculate the sample size necessary for our project, we used a formula for sample size calculation (SRS without replacement).

$$n_0 = [ z^2_{\alpha/2} (SD)^2 ] / (ME)^2, \text{ where } n \geq Nn_0 / (N+n_0)$$

$$\begin{aligned} SD &= [p(1-p)]^{1/2} \\ &= [.5(1-.5)]^{1/2} \\ &= .5 \end{aligned}$$

$$\text{Let ME} = .055 \text{ or } 5.5\%$$

$$[(1.96)^2 (.5)^2] / (.055)^2 = 317.4876$$

$$\begin{aligned} n &\geq (N * n_0) / (N + n_0) \\ &\geq (5951 * 317.4876) / (5951 + 317.4876) \\ &\geq 301.407 \end{aligned}$$

Assumptions for sample size calculation:

In order to calculate our standard deviation, we let our p value be .5 because we are estimating p and are not sure what the value is. Thus, we choose .5 because that is the worst-case guess for p.

We are using 5.5% as our margin of error. After analysis, the 5.5% margin of error accounts for any random sampling error that we may encounter through our survey.

Since we expect a response rate of approximately 25%, and we want a sample size of 301 students, we will randomly sample  $(301/.25) = 1,204$  undergraduate students at the Carnegie Mellon Pittsburgh campus. By sampling 1,204 students, we will compensate for any non-response that we may encounter through our sampling.

### Respondents and Non-response

Based on our sample size calculation, we contacted 1,320 undergraduates via email on March 18<sup>th</sup>, 2010. We also sent a reminder email on March 28<sup>th</sup>, 2010. The email that we sent was through QuestionPro.com and included a link to the survey (See Appendix A). Of the 1,320 students that we sent emails to, 384 students viewed our survey and 352 students started our survey. So far, we have had 301 students actually complete the survey. This means that our completion rate is 85.51% (of those who viewed our survey) and our non-response rate is 77.197%. We received one angry email from a student who claimed that he had been “spammed” with emails from our class. As a result, we sent an apologetic email back to him and removed him from our email list. In order to get the other 40 students to complete the survey, we plan to send a final reminder email.

great  
response

### Questionnaire

since this is a final report, I  
assume not!

The questions that we asked on our survey began with demographic information. We then went on to ask about activity level and frequency of UC athletic facilities on a weekly basis. Our questions then became more specific as to which facilities were used most and if students had to wait for certain facilities in order to use them. We also asked about cleanliness, ease of use, the locker rooms, and check in process. We concluded by asking students about three suggested improvements and three things that the UC athletic facilities were doing well.

Please see Appendix A for the original email that we sent to students. We drafted our original email very carefully. We know that students often delete emails if they see that they are receiving a survey. We also know that students here very busy and do not want to be spammed with surveys and emails. Therefore, we tried to emphasize that we had to send this email for our class so that they would not get upset with us. We also hoped that by pleading to fellow students, they would be more responsive if they knew the survey was being conducted by students rather than by CMU faculty or staff. Additionally, another factor we wanted to emphasize was that it would take less than five minutes so that students knew that it would not take up much of their time.

Please see Appendix B for the reminder email that was sent. The reminder email that we sent out contained the entire contents of the original email with a new email above it. We tried to keep the new email short and emphasize how much we needed their help. By pleading to them, we hoped that we would elicit more responses. We thanked them again for their time to be as appreciative as possible. We strongly felt that the more appreciative we seemed, the more likely they would be to complete our survey accurately.

Please see Appendix C for our statement of informed consent. This section was included at the very beginning of the survey before students began. It explained the basic risks that would be anticipated and the confidentiality of the survey. It also emphasized that students could withdraw at any time. We wanted to also include a contact person's name in this section in case students had any questions or concerns. After reading the statement of informed consent, students had to confirm that they were eighteen years of age or older by checking a box. They then clicked on the button labeled "continue" to accept the terms of agreement and begin the survey.

Please see Appendix D for our full survey. This is a copy of our entire survey in paper format. We had several types of questions in our survey. The first type of question was such that respondents could only select one answer out of the given choices. The second type of question was that respondents could select as many answers as they wanted, given that the answer selections applied to them. The final type of questions asked were open-ended and allowed respondents to answer however they wished.

### **Post-Survey Processing**

After conducting our survey, we used the CMU Institutional Research and Analysis Website to compute post stratification weights. We took the population proportion and divided it by the sample proportion in order to compute weights for certain demographic variables. Please see Appendix E for our weights according to academic department, gender, undergraduate year, and housing.

We did not focus heavily on post stratifying the results of all of our data. The reason behind this was that we did not want to focus as much on whether the students in CIT or CFA were well represented in the data and accurately represented. Instead, we wanted to focus our results on those students who actually utilized the UC athletic facilities in order to improve the facilities for them. Our goal was not to increase attendance at the UC athletic facilities but rather to make the current UC athletic facility users satisfied.

**This is a very good point. The "right" weights would pay attention to the true #'s of students from each college \*who use the UC facilities\*; this is different from the general number of students in each college.**

### **Section 3: Results**

#### **Research Question**

Our goal is to research how CMU undergraduates feel about the UC athletic facilities. We hope to find out what improvements can be made to the athletic facilities to maximize students' satisfaction.

**None of the results, and none of the graphs, indicate confidence intervals, margin of error, etc.**

**Why bother with sample size calculation?**



## **Statistical Analyses**

While we did not necessarily post stratify all of our data, we were curious about some of the relationships between variables. For example, we analyzed wait time by academic year. Please see Appendix F for the weighted percentages for wait time by academic year ("Institutional Research & Analysis"). After post stratifying these, we concluded the same as we did without the post stratification weights. The conclusion was such that the highest percentages of weight times were with the treadmills, elliptical machines, and free weights. Thus, our recommendation directly correlated to these results found.

The next relationship in variables that we were interested in calculating was weekly activity level according to gender. Please see Appendix G for our calculations ("Institutional Research & Analysis"). We post stratified this data as well in order to calculate the percentages. The percentages that we found were overall pretty even. No gender worked out significantly more than the other gender. However, in the higher spectrum of physical activity (5+ hours per week), the males did tend to have slightly higher percentages.

The final relationship that we analyzed involved the convenience of the UC athletic facilities according to where students were housed (on-campus vs. off campus). Please see Appendix H for our post stratification calculations that analyzed whether students who lived on campus utilized the UC athletic facilities more frequently than students who lived off campus ("Institutional Research & Analysis"). Our results illustrated that in the lower range of use (0-3 times per week), there was no significant difference between on-campus and off-campus housing. However, in the upper ranges (4+ times per week), there were a significantly higher percentage of on-campus students who used the UC athletic facilities. Those students who lived off campus did not frequent the UC athletic facilities as much in the higher ranges. This matches our initial predictions because those students who live off-campus are not as likely to come back onto campus in order to work out.

## **Section 4: Discussion**

### **Survey Effectiveness**

We strongly feel as though our survey questions did an excellent job answering the following three main questions. First, we wanted to find out how CMU undergraduates use and feel about the UC athletic facilities. Secondly, we wanted to find out which facilities were used most. Thirdly, we wanted to know which facilities needed improvement and what aspects of the facilities that students were already satisfied with. We were able to ask basic demographic questions to identify the characteristics of UC gym goers. The survey then asks questions that allowed survey takers to list which facilities they use, and rate their overall satisfaction. Our group then designed the survey to emphasize specific aspects of the UC athletic facilities such as the check-in process, locker room, wait-times, and online reservation process. We feel that our survey caters to all aspects of the UC athletic facilities,

and is able to pinpoint specific aspects that can be approved on. In the end, we are able to take the answers from the survey to answer the main questions above.

### **Surprising or Expected Results**

Through the initial analysis of our data, we were able to find both surprising and expected results. We found that 27.67% of the facility users categorized themselves as having a “moderate level of activity” (physical activity for 3-5 hours per week). We found it very surprising that out of the all the survey takers, 75% of respondents worked out at least one hour each week. The reason this statistic surprised us was that we did not think that CMU undergraduates had enough time to work out amidst the rigorous course load and extensive involvement in extracurricular activities.

Something that we expected was the general negative opinion of the check-in process of all the UC-gym facilities. Being regular gym goers, we thought that the process of swiping your student ID card then obtaining a wrist band was very inefficient and a waste of paper. As a group, we identified this problem and wanted to see if this was the general opinion of the UC gym users. As expected, the general sample felt that it was highly inefficient and stated that a card swiping mechanism at the entrance of each facility would be much more convenient.

Before the survey, we hypothesized that convenience and housing situation would be highly correlated. We felt that those students who lived on campus would view the UC athletic facilities as being more convenient than those students who live off campus.

### **Strengths and Weaknesses of the Survey**

Strengths:

- 1) Some questions provided open-ended questions for survey takers to give their own opinions about a topic
  - a. This was extremely useful to us and was probably the area that we received the most beneficial feedback from our respondents. For example, one of the questions asked respondents to comment on the check-in process after responding whether or not they thought it was efficient. Even though a majority agreed that the process was efficient, many still made recommendations to improve the process. This data would never have been found if it was not an open-ended question.
- 2) Our sample selection process was very effective
  - a. The calculated 25% response rate was almost perfectly accurate, given that we received two responses more than we needed. Therefore, we sent out the correct number of emails asking students to respond.
  - b. Additionally, based on the comparison of the sample demographics with the population demographics, we also had a very randomly selected population that was quite representative of the population.
  - c. We only had one angry student complain about the emails that were sent. We managed to receive a sample of 303 students with only one initial email and one

follow-up email to remind students who still had not completed the survey to do so.

- 3) Identified a wide variety of aspects of the UC athletic facilities
  - a. We were able to find drawbacks of different aspects of the facilities from the locker rooms to the racquetball courts to the treadmills. Analyzing the specific aspects of the UC athletic facilities enabled us to dissect the problems and come up with general recommendations that would increase user satisfaction. ✓

#### Weaknesses:

- 1) Did not account for other gym facilities on campus (for example, Skibo gym users)
  - a. While this was a weakness within our survey, we simply did not have the resources to analyze the data if we had issued multiple surveys. We also would have had to have a much bigger sample size for each facility on campus, which would have required emailing the entire undergraduate population. ✓
  - b. We ran a risk with our survey because people may have answered our survey questions with other gym facilities in mind. However, we tried very hard to emphasize in our survey that we were only focusing on the UC athletic facilities to try to minimize this risk. ✓
- 2) We could have identified more possible areas of improvements regarding each facility
  - a. We definitely considered the many aspects to ask students about. Nonetheless, we worried about making the survey too lengthy because it would deter students from taking our survey, which would have resulted in a much smaller sample size. As a result, we tried to narrow down our topics and focus on issues that we thought were significant and could be improved. Students therefore gave very constructive feedback because the survey was not lengthy and was very straightforward. ✓

#### Recommendations for the Future

In future studies, we recommend that students survey all of the athletic facilities on campus. We would have to create a different survey that is specific to each athletic facility, so that we would get more specific feedback on them. We ran the risk of students answering our survey based on their feelings about different athletic facilities. Thus, we would want to minimize this risk by creating facility-specific surveys. ✓

Another recommendation is for students who did not work out at all or did not ever use the UC athletic facilities to complete the survey as soon as they answered those questions. Instead, we included a “Not applicable” category on many of the questions to account for those students who never used the facilities. While this was not a hindrance to us, it did not benefit us in any way and would have made the survey even shorter for those students who did not have any useful feedback to give to us. ✓

## Take-Home Messages

If we were to give a recommendation to the UC athletic facility today, we would give both long term and short-term recommendation. After analysis, we found that the basis of much of the problems was the lack of space of the UC athletic facilities. There is often not enough space to have a lot of equipment, which contributes to long wait lines. **Because of this, we recommend that the Danforth Lounge be converted to a “cardio” room or annex of the UC athletic facilities.** This room would be comprised of all the treadmills, elliptical machines, row-machines and bikes. This would also free up more space for the weight room, overall increasing space. It will also enable us to purchase more machines, which would decrease wait times. We understand that this is a huge commitment for the university and will take a lot of consideration. ✓

perhaps this should be a question in another survey!

We have also come up with three short-term recommendations. Firstly, we would improve the check-in process by implementing card swipe machines at the door of every facility. This card swipe mechanism would work much like the card readers at many of the student dormitories on campus. This would ensure that only CMU students would have access to and be able to enter the facility. We felt that this was the optimal solution because many students felt that the wristbands were a waste of paper. We pride ourselves on being a “green” university and the wristbands are currently seen as a waste of resources. Students also gave other suggestions to eliminate the paper wristbands. One such solution was to have reusable wristbands so that we would not use as much paper. While this would be a “greener” solution, we felt that it was not as sanitary to have reusable wristbands. Another recommendation made by students was to have stickers on clothing. This was suggested because many students felt that the wristbands interfered with their workout and were a hindrance to them. While this would have fixed that aspect, it would still have wasted paper, which is why the card swipe machines was the optimal solution. ✓

Second, we would recommend the UC athletic facilities to upgrade and purchase new equipment. Even though the equipment is seen as being effective, many people commented that the equipment is worn-down and old. We specifically recommend new purchases of basketballs, racquetball equipment, and free weights. This is a relatively inexpensive change that will highly benefit and increase user satisfaction. ✓

Third, we would recommend improving entertainment throughout the facilities. We specifically suggest buying more TVs, and installing a centralized speaker system. The speaker system will be controlled at the UC facilities main desk and with remote speakers installed in all of the courts, rooms, and even pool area.

## References

Please see Works Cited page at the end of the report for all of the references that we used for this project. ✓

## **Appendix A: Original Email Sent to Students**

We are a group of students currently enrolled in 36-303: Sampling, Survey, and Society. As a part of this course, we are conducting a study on CMU students' satisfaction with and utilization of the UC athletic facilities.

You have been selected to participate in our study! We would greatly appreciate if you could take our online survey at the link below by Friday, March 26th. It will only take approximately 5 minutes and would help us tremendously!!

Survey Link: <SURVEY\_LINK>

We greatly appreciate your time and effort!

**We know how busy your lives are and want to thank you for helping us to do better in this course!!**

Regards,

Chris Lee, Swetha Reddy, Sonam Rajpal, Jung Yub Lee, and Siddhartha Gupta  
Group C - 36-303: Sampling, Survey, and Society

## **Appendix B: Follow-up Email Sent to Students**

We really need your responses!!! We have about half the number of respondents that we need to accurately analyze our data. So far, the average time to take the survey has been 4 minutes, so please help us out and take our survey!! We know how busy you are but sincerely hope that you can find a few minutes to help us out.

Survey Link: <SURVEY\_LINK>

Thanks again!!

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We are a group of students currently enrolled in 36-303: Sampling, Survey, and Society. As a part of this course, we are conducting a study on CMU students' satisfaction with and utilization of the UC athletic facilities.

You have been selected to participate in our study! We would greatly appreciate if you could take our online survey at the link below by Friday, March 26th. It will only take approximately 5 minutes and would help us tremendously!!

Survey Link: <SURVEY\_LINK>

We greatly appreciate your time and effort!

**We know how busy your lives are and want to thank you for helping us to do better in this course!!**

Regards,

Chris Lee, Swetha Reddy, Sonam Rajpal, Jung Yub Lee, and Siddhartha Gupta  
Group C - 36-303: Sampling, Survey, and Society

### **Appendix C: Informed Consent Before Respondents Began Survey**

You are invited to participate in our survey about the CMU University Center athletic facilities. It will take approximately 5 minutes to complete the questionnaire.

Your participation in this study is completely voluntary. The probability and magnitude of harm or discomfort anticipated in the following survey are not greater, in and of themselves, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examination tests. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point.

Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Swetha Reddy by email at [swethar@andrew.cmu.edu](mailto:swethar@andrew.cmu.edu).

Thank you very much for your time and support! Please start with the survey now by checking the box below, if appropriate, and clicking on the Continue button below.

As a general summary of your survey results it would be useful to put the counts and percents of responses in each category in each question along with the questions themselves in this appx.

## **Appendix D: Survey Questions**

1) Are you a current full-time undergraduate student on the Pittsburgh campus?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

2) What undergraduate year are you?

\_\_\_\_\_ Freshman

\_\_\_\_\_ Sophomore

\_\_\_\_\_ Junior

\_\_\_\_\_ Senior

\_\_\_\_\_ 5<sup>th</sup> Year Scholar

3) What is your age?

\_\_\_\_\_ < 18

\_\_\_\_\_ 18

\_\_\_\_\_ 19

\_\_\_\_\_ 20

\_\_\_\_\_ 21

\_\_\_\_\_ 22

\_\_\_\_\_ > 22

4) What academic department are you in? Select all that apply.

\_\_\_\_\_ H&SS (Humanities and Social Sciences)

\_\_\_\_\_ MCS (Mellon College of Science)

\_\_\_\_\_ CIT (Carnegie Institute of Technology)

\_\_\_\_\_ SCS (School of Computer Science)

\_\_\_\_\_ CFA (College of Fine Arts)

\_\_\_\_\_ TSB (Tepper School of Business)

\_\_\_\_\_ SHS (Science and Humanities Scholar)

\_\_\_\_\_ Other. Please list: \_\_\_\_\_



5) What is your gender?

☐ Male

☐ Female

6) Where do you live?

☐ On Campus

☐ Off Campus

7) What is your ethnicity? Please select all that apply.

☐ American Indian or Alaskan Native

☐ Hawaiian or Other Pacific Islander

☐ Asian or Asian American (includes South Asian subcontinent)

☐ Black or African American

☐ Hispanic or Latino

☐ Non-Hispanic White

☐ Other

8) How would you describe your physical activity level? (This includes playing sports, lifting weights, jogging, etc.)

☐ Inactive (do not work out at all)

☐ Very Low (work out less than 1 hour per week)

☐ Low (work out 1-2 hours per week)

☐ Moderate (work out 3-5 hours per week)

☐ High (work out 5-7 hours per week)

☐ Very High (work out 7+ hours per week)

9) The following is a list of the UC athletic facilities. Please select all that you have used in the past semester thus far.

- ☐ Weight/Treadmill Rooms
- ☐ Racquetball/Squash Courts
- ☐ Basketball Gymnasium
- ☐ Pool/Diving Board
- ☐ Activities/Dance Room
- ☐ Other. Please list: \_\_\_\_\_

10) In the past week, how many times did you use a UC athletic facility (including courts and gyms)?

- ☐ 0 – 1 Time
- ☐ 2 – 4 Times
- ☐ 4 – 6 Times
- ☐ More Than 6 Times

11) Is the response in the previous question typical of how many times you use a UC athletic facility on a weekly basis?

- ☐ Yes
- ☐ No
- ☐ N/A

12) Please select the answer that you feel is best:

The facility(ies) that you use are clean.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ N/A

13) Have you spent time waiting to use any of the following machines or facilities? Or have you been unable to use any of the following machines or facilities because they were already being used? Please select all that apply.

- ☐ Weights
- ☐ Treadmill
- ☐ Elliptical
- ☐ Racquetball/Squash Courts
- ☐ Basketball Gymnasium
- ☐ Pool/Diving Board
- ☐ Activities Room
- ☐ Have never had to wait
- ☐ Other. Please list: \_\_\_\_\_

14) The equipment available in the facility(ies) that you use are effective and serve their purpose.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ N/A

15) Machines or equipment that you do not use often or have never used are well explained by instructions and easy to use.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ N/A

16) Have you ever rented/reserved a specific facility space in the UC?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

17) How easy was the process to rent/reserve a specific facility in the UC?

\_\_\_\_\_ Very Easy

\_\_\_\_\_ Easy

\_\_\_\_\_ Neutral

\_\_\_\_\_ Difficult

\_\_\_\_\_ Very Difficult

\_\_\_\_\_ N/A

18) The check-in process is efficient (wristband/card swipe).

\_\_\_\_\_ Strongly Agree

\_\_\_\_\_ Agree

\_\_\_\_\_ Neutral

\_\_\_\_\_ Disagree

\_\_\_\_\_ Strongly Disagree

\_\_\_\_\_ N/A

19) Would you make changes to the check-in process?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If yes, please specify

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20) Have you used the locker room in the past?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

21) The locker room is satisfactory.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ N/A

22) Please list 3 things that you like about the UC athletic facilities.

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23) Please list 3 changes that would improve the UC athletic facilities for you.

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## **Appendix E: Post Stratification Weights**

<b>Academic Department</b>	<b>Actual</b>	<b>Sample</b>	<b>Weights</b>
CFA	967	39	1.703696712
CIT	1653	107	1.061498767
H&SS	1087	89	0.839208658
Other	291	24	0.833128834
MCS	723	58	0.856526338
SCS	587	48	0.840286299
Tepper	397	27	1.010315837
	5705	392	

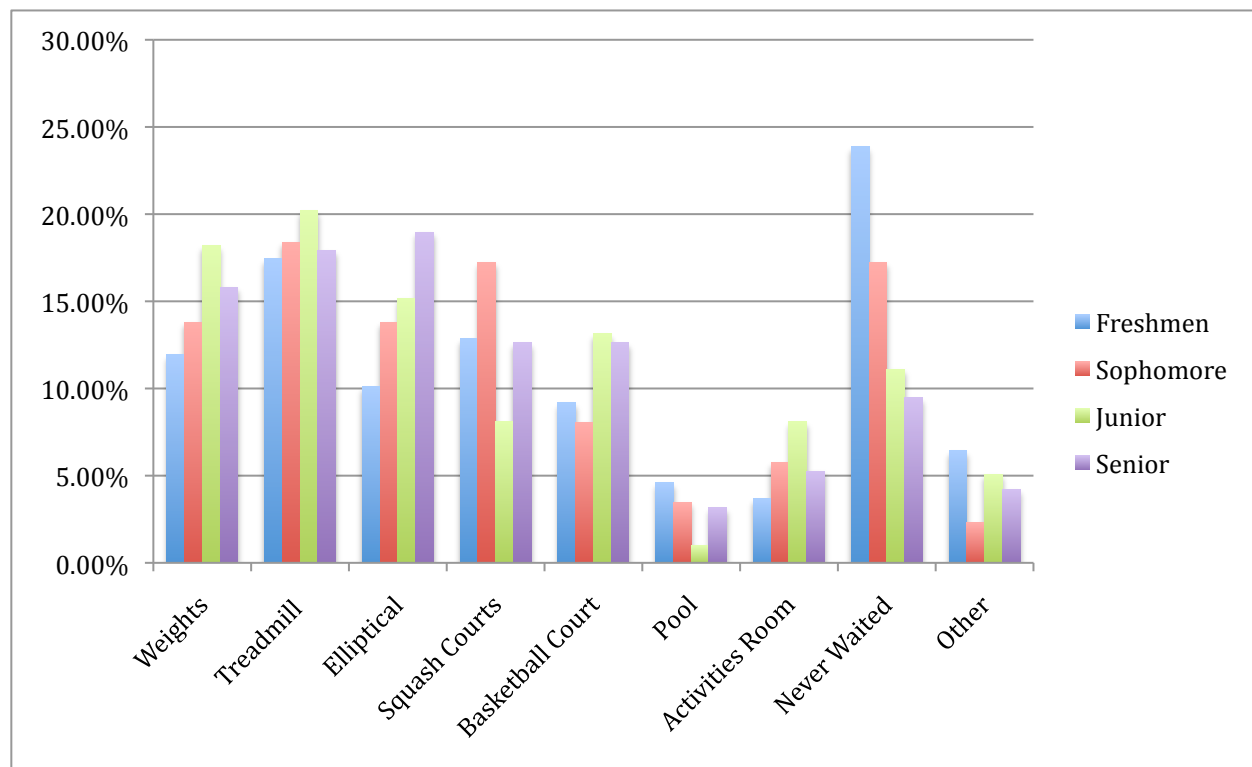
<b>Gender</b>	<b>Actual</b>	<b>Sample</b>	<b>Weights</b>
Male	3483	173	1.136728368
Female	2468	163	0.854883388
	5951	336	

<b>Undergraduate Year</b>	<b>Actual</b>	<b>Sample</b>	<b>Weights</b>
Freshmen	1530	103	0.870292477
Sophomore	1491	80	1.09193976
Junior	1374	85	0.947062914
Senior	1357	69	1.152236903
	5752	337	

<b>Housing</b>	<b>Actual</b>	<b>Sample</b>	<b>Weights</b>
On Campus	2121	115	1.048636323
Off Campus	3771	220	0.974576467
	5892	335	

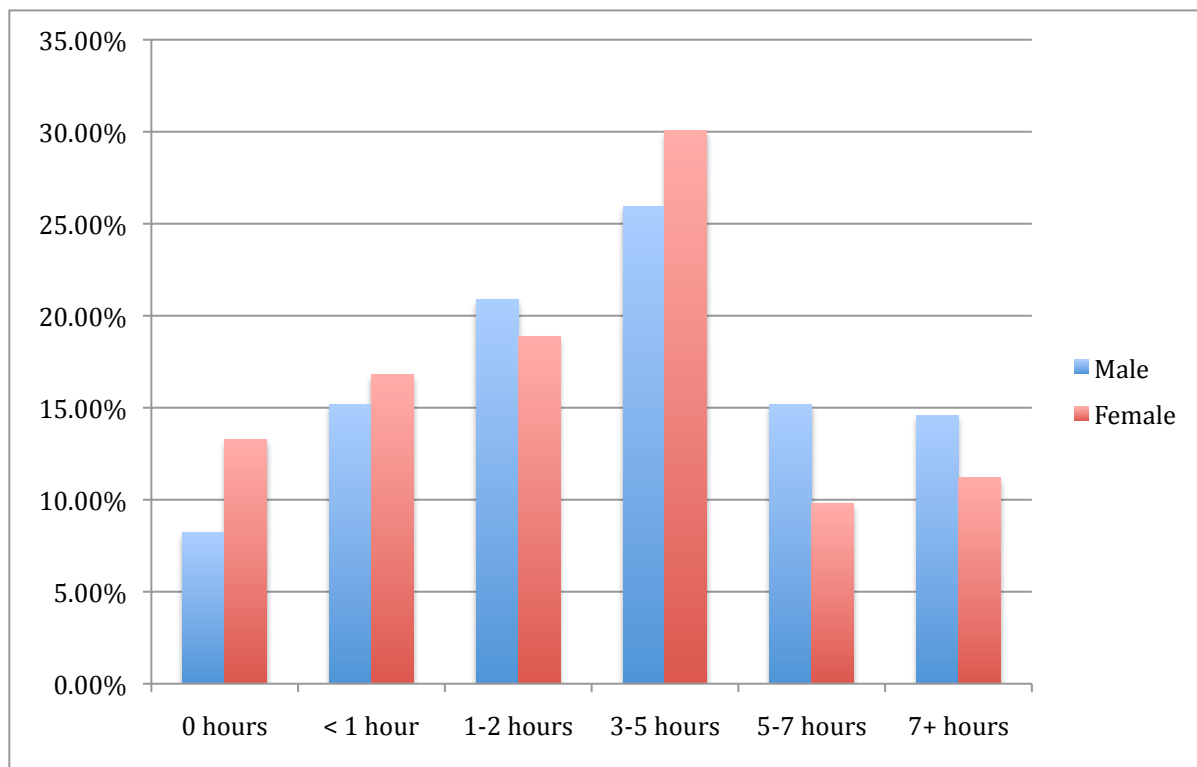
## Appendix F: Weighted Percentages for Wait Time by Academic Year

	Weights	Treadmill	Elliptical	Squash Courts	B-ball Court	Pool	Act. Room	Never Waited	Other	
<b>Freshmen</b>	13	19	11	14	10	5	4	26	7	109
0.870292477	11.314	16.536	9.573	12.184	8.703	4.351	3.481	22.628	6.092	94.86
Weighted Percentage	0.119	0.174	0.101	0.128	0.092	0.046	0.037	0.239	0.064	
<b>Sophomore</b>	12	16	12	15	7	3	5	15	2	87
1.09193976	13.103	17.471	13.103	16.379	7.644	3.276	5.460	16.379	2.184	94.99
Weighted Percentage	0.138	0.184	0.138	0.172	0.080	0.034	0.057	0.172	0.023	
<b>Junior</b>	18	20	15	8	13	1	8	11	5	99
0.947062914	17.047	18.941	14.206	7.577	12.312	0.947	7.577	10.418	4.735	93.759
Weighted Percentage	0.182	0.202	0.152	0.081	0.131	0.010	0.081	0.111	0.051	
<b>Senior</b>	15	17	18	12	12	3	5	9	4	95
1.152236903	17.284	19.588	20.740	13.827	13.827	3.457	5.761	10.370	4.609	109.4
Weighted Percentage	0.158	0.179	0.189	0.126	0.126	0.032	0.053	0.095	0.042	



## Appendix G: Weighted Percentages for Weekly Activity Level by Gender

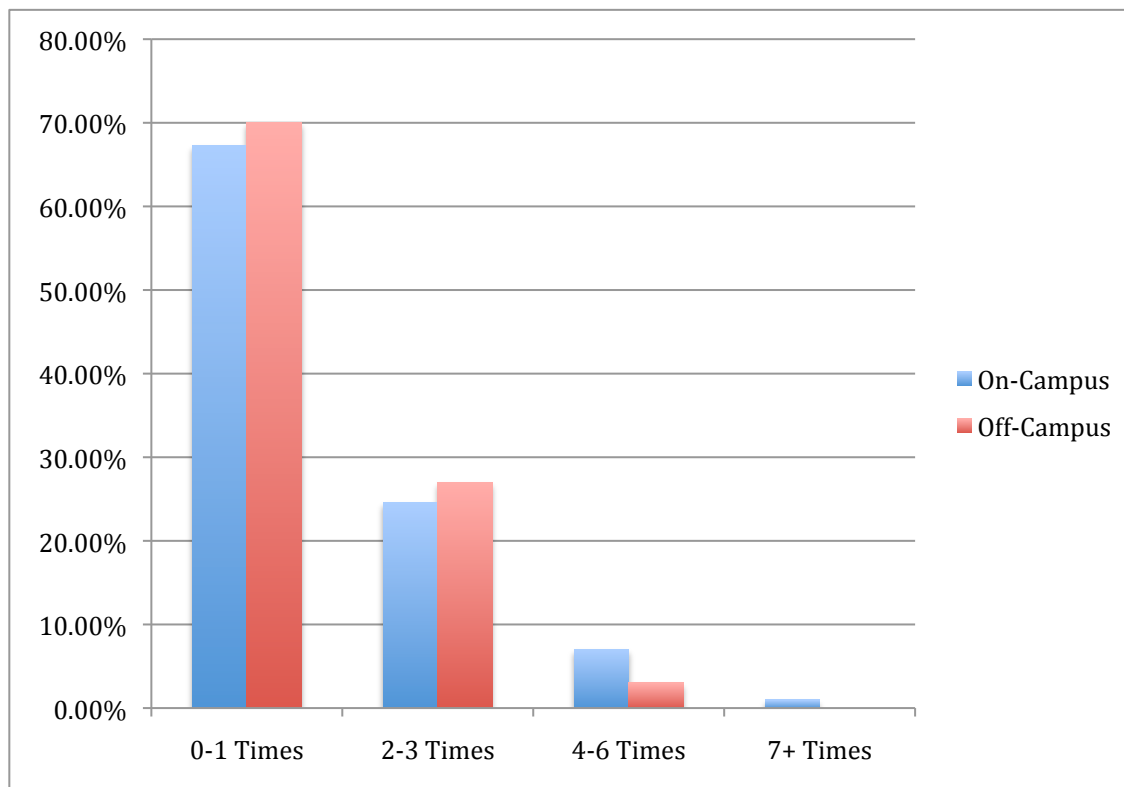
	<b>0 hours</b>	<b>&lt; 1 hour</b>	<b>1-2 hours</b>	<b>3-5 hours</b>	<b>5-7 hours</b>	<b>7+ hours</b>	
<b>Male</b>	13	24	33	41	24	23	
1.137	14.777	27.281	37.512	46.606	27.281	26.145	179.603
	8.23%	15.19%	20.89%	25.95%	15.19%	14.56%	
<b>Female</b>	19	24	27	43	14	16	
0.855	16.243	20.517	23.082	36.760	11.968	13.678	122.248
	13.29%	16.78%	18.88%	30.07%	9.79%	11.19%	





## **Appendix H: Weighted Percentages for Weekly UC Athletic Facilities Use by Housing**

	<b>0-1 Times</b>	<b>2-3 Times</b>	<b>4-6 Times</b>	<b>7+ Times</b>	
<b>On-Campus</b>	134	49	14	2	
1.049	140.517	51.383	14.681	2.097	208.679
	67.34%	24.62%	7.04%	1.01%	
<b>Off-Campus</b>	70	27	3	0	
0.975	68.220	26.314	2.924	0.000	97.458
	70.00%	27.00%	3.00%	0.00%	



## Works Cited

"Institutional Research & Analysis." *Carnegie Mellon University*. Web. 20 Apr. 2010.  
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<<http://www.cmu.edu/university-center/fitness/index.html>>.

**at least 5 references needed  
for a 5-person group.**

**also format not as requested**