

**The Implementation of Active Design in Parks & its
Contribution to Community Health & Wellbeing
Final Report**

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Introduction

Background to the Problem

In Stillwater, Oklahoma there is a need for improvements to local parks. The improvements necessary range from improved accessibility to parks, repairing and updating local parks, and making the parks more sustainable. Improved park access is necessary for the health of the community of Stillwater. 47% Of the residents in Stillwater live within a 10 minute walking distance of a park, and the parks are not utilized to their full potential (Everyone deserves a park within a 10-minute walk of home, n.d.). This is resulting in a negative impact on the health of the residents in Stillwater. In the state of Oklahoma, 34.8% of people have a BMI of 30.00 or higher (Annual Report, 2019), and 18% of youth are obese (State Obesity Data, 2019). These changes can be made through the implementation of elements of active design. There are ten active design principles that can be followed to increase park activity, and some of those principles that should be focused on in Stillwater is: walkable communities, connectivity of walking and cycling routes, having spaces that are multifunctional and open, and having high quality streets and equipment (park equipment) (City of New York, 2010).

Scope

The main focus of this study is to assess the differences in park usage and the preferences between regular and irregular park users familiar with local Stillwater parks.

Critical Need

Physical inactivity is a significant public health issue, caused in part by neighborhood and community environments that foster youth inactivity and sedentary behavior (Richard et al., 2011; Ogden et al., 2014; Knuth and Hallal, 2009; Ferraro et al., 2003; Sallis et al., 2006). For Stillwater community members, parks can be essential in bettering overall health and wellbeing and reducing obesity rates and chronic illness, something Stillwater has a high rate of. Parks are regularly used in Stillwater, but there is a critical need to increase the elements of active design and increase regular maintenance and repairs, as well as increase safety and activities. The

critical need for this study is to determine what aspects of local parks need to be improved upon or added to in order to increase overall attendance, leading to the reduction of obesity rates, decreased chronic illnesses, and increased physical and mental wellbeing.

Problem Statement

Insufficient access to and a lack of active design implemented in the local parks of Stillwater, Oklahoma results in low attendance, contributing to the city's high obesity rates. In what ways might we implement and incorporate active design into the local parks of Stillwater, Oklahoma that benefits the community's health and well being as well as assess differences in park usage and preferences between regular and irregular park users?

Methodology

For this study, we facilitated a focus group and created a survey to collect data. The participants in the focus group ranged in age from twenty-two to sixty. Three of the four participants were students of OSU and one was faculty of OSU. Of the three students, one was a graduate student in accounting. The other two are undergraduate students, one in accounting and the other in applied sociology: environmental with minors in history and geography. The faculty participant is the OSU sustainability coordinator. The meeting place for this group was held in 227 of the new main central plant on Washington Street. There were two group conductors in which one acted as facilitator by asking the questions and keeping the conversations on track while the other was the note taker as well as recorded the conversation for accuracy that lasted for eighteen minutes and nineteen seconds. Permission to observe and record participants was gained prior to conducting the focus group. Qualitative questions included suggestions for combining active design and sustainability, sustainable and active design features that could be included, and overall changes needed, concerns about, and suggestions for local parks. As for the survey, there were thirty participants between the ages of 18 and 34, twenty of whom used parks. The qualtrics survey utilized the likert scale and open ended questions. Quantitative questions prompted participants to rate the importance of particular park aspects and their frequency of park visits. Qualitative questions included what parks participants utilized, suggestions for local parks, what makes parks attractive, and how participants spent their time at parks.

Data Analysis

The data of our focus group was analyzed by conducting a content analysis, looking at the responses from our participants, and extracting the major themes that were discussed. These themes were then broken down into subthemes. To analyze the quantitative data we collected from the qualtrics survey, we conducted a t-test. To do this we broke down our data based on how frequently our participants visited parks, weekly versus monthly. We did this because we had an even number of participants who responded with attending parks weekly versus attending parks monthly, and we set our significance level at 0.05.

Then with this criteria we looked at if there was any significant difference between the two groups in regard to stress level reduction when visiting parks, happiness level when visiting parks, importance of park signage, and what attributes of a park are most important to the participants. The significance level told us that there was no statistically significant difference between the weekly and monthly park users as it relates to stress reduction, happiness level, and importance of park signage.

Results

Hypotheses

With this study, we anticipated that revamping Stillwater parks to utilize active and universal design will increase park attendance of all demographics that will sequentially decrease obesity and chronic illnesses. Our aim is to make parks more sustainable and actively designed by proposing designs to individuals of the before and after usage of the park when universal and active design elements are implemented. We may then measure how they perceive these designs. With Stillwater being the third in the state of Oklahoma with the highest obesity rates, it is important that we offer more equipment in our parks that is going to attract all walks of life to become active in order to get these rates down. We expect this will lower the obesity rates and create a positive impact by also lowering other chronic illnesses such as heart disease and stroke, high blood pressure, breathing problems, and diabetes. In turn, this will save on medical costs due to the community's obesity rates decreasing with the potential to eliminate some of these chronic illnesses.

Quantitative Results

For the quantitative data we collected, the results from our t-tests found that there was no significant difference in the responses between weekly and monthly park goers. When participants of the survey were asked “How important is park signage to you?” and asked to respond using a likert scale- lowest rating being “not at all important” and highest rating being “extremely important”- there was no significant difference found between the monthly versus weekly park goers, and the rating was high for both groups. When asked “How happy are you when you visit parks?” and asked to respond with a likert scale- lowest rating being “extremely unhappy” and highest rating being “extremely happy”- there was so significant difference between the two groups, and the rating was high for both groups. When asked “My stress level is reduced when I visit parks” and prompted to respond with a likert scale- lowest rating being “strongly disagree” and highest rating being “strongly agree”- there was again no significant difference found between the two groups, and there was also high ratings from the participants. This shows that overall there is not significant difference between weekly versus monthly park goers in the importance and individual significance of parks to the participants. When we asked participants what attributes of a park they found to be the most important, and this is where we found the most differences between the two groups. The top three rankings for the weekly park attendees were: walking trails, water source, benches to sit down. The top three rankings for the monthly park attendees were: safety, walking trail, well maintained. Walking trails were the only common attribute between the two groups. The top attributes for the monthly park goers were more related to the maintenance of the parks, while the weekly park goers top rankings were more related to ways to rest. This could be due to the fact that the weekly participants are engaging in exercise and exhausting more energy while at the park, while the monthly participants may be going for reasons of leisure and relaxation.

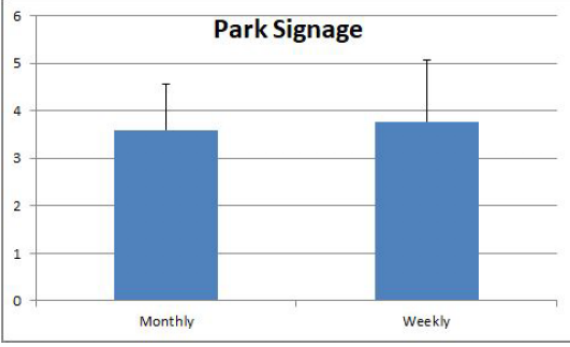
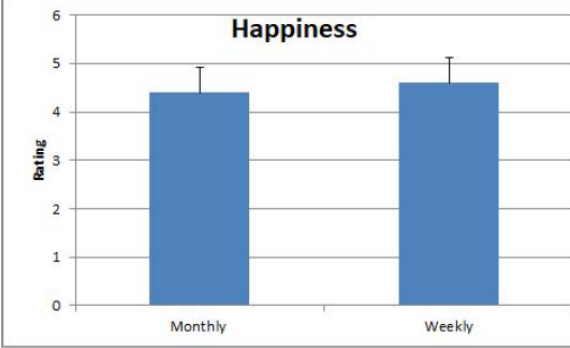
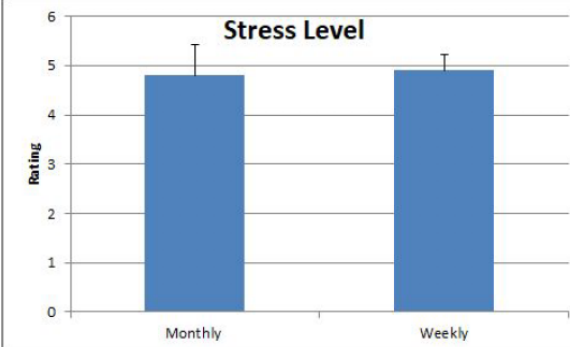
Question	Results	Chart
<p>How important is park signage to you?</p>	<p>Ho: $\mu_{\text{monthly}} = \mu_{\text{weekly}}$ H1: $\mu_{\text{monthly}} > \mu_{\text{weekly}}$ Assumption: Normality assumption met Conclusion: Since p-value > 0.05, we fail to reject Ho. Therefore, there is no statistically significant difference between the monthly and weekly park users as it relates to park signage P-Value 0.10</p>	
<p>How happy are you when you visit parks?</p>	<p>Ho: $\mu_{\text{monthly}} = \mu_{\text{weekly}}$ H1: $\mu_{\text{monthly}} < \mu_{\text{weekly}}$ Assumption: Normality assumption met Conclusion: Since p-value > 0.05, we fail to reject Ho. Therefore, there is no statistically significant difference between the monthly and weekly park users as it relates to happiness when visiting parks P-Value 0.17</p>	
<p>My stress level is reduced when I visit parks</p>	<p>Ho: $\mu_{\text{monthly}} = \mu_{\text{weekly}}$ H1: $\mu_{\text{monthly}} < \mu_{\text{weekly}}$ Assumption: Normality assumption met Conclusion: Since p-value > 0.05, we fail to reject Ho. Therefore, there is no statistically significant difference between the monthly and weekly park users as it relates to stress level P-Value 0.31</p>	

Table 1. t-test results from survey questions

	#1 Ranking	#2 Ranking	#3 Ranking
Monthly	Safety	Walking trail	Well maintained
Weekly	Walking trail	Water source	Benches to sit down

Table 2. Rankings of park attributes

Qualitative Results

From our focus group we found that there is a general desire for improvements to local parks. The improvements discussed were topics such as: Improved signage, updated park equipment, more local transportation options, adding a trail that would connect all of the parks, implementing a bike share program, installing hammocking poles, and also improved accessibility to the parks. For example, when asked the question, what signage would you like to see, there was a large portion that answered walking distance. When participants were asked about their perceived safety of parks in Stillwater, it was found that a majority of participants did not find any of the local parks to be unsafe. Although, some did point out that they would not want to be out alone at night, and a suggestion to amend that concern would be increased lighting at local parks for night time attendance. Another positive finding is that there was interest in sustainable elements such as solar energy, increased recycling bins, having more native plant species and vegetation at parks, and using recycled materials for park equipment being added to parks. Several of the participants showed an interest in dog parks as well. Recommendations included building new dog parks, adding grass, and providing better maintenance to the current dog park.

Themes	Sub themes	Responses
Improvements	Parking, Signage, Walking Trails, Shade Trees, Water Fountains, Activities, Parking, ADA, Walkability, Bike Access, Bike Sharing, Trail Connecting all Parks	<p>“Interpretive signage that teaches people, visiting the park, about the water quality or the plants and animals.”</p> <p>“I would like to see a bicycle trail that connects all the parks, like the one Boston has.”</p>
Safety	Improved Lighting, Added Sense of Security	“Improved lighting could be a good thing”
Activities	Workout equipment, hammocking poles, trampoline parks	<p>“Exercise stations spaced around so it’s part of a walking tour around the park. You walk and then you stop and do this exercise and you walk some more.”</p>
Sustainability	Materials Used, Solar Energy, Put Recycling Bins at Parks, More Native Plants (ground coverings), Reduction of Unnecessary Pesticides, Less Turf	<p>“We’ve seen benches that have solar panels on them and use it to charge my phone.”</p> <p>“Use Nike grind for the surface, so, they take tennis shoes and use to make a rubber”</p>
Convenience	Parks Close to Home, Parks Knowledgeable of (Boomer), Bus Stops at Parks	“Bus stops added to parks would make it more convenient for those who do not have a car”

Table 3. Coded information from identified themes and subthemes

Discussion

Comparison to Literature

The study we conducted looked more at what people within the community wanted out of local parks and what improvements they would like to see, and when asked if they would go to parks more if improvements were made, a large number of participants said yes. We did not have the opportunity to study an updated park and get results from before and after updates were made. A study conducted with a much larger number of participants contradicts our finding that park updates would increase attendance. In this observational study with over 700 participants, researchers found a decrease in park attendance with updated parks, and the perceived safety of those areas was not impacted either (Cohen et al., 2009). What would have been interesting to know is what specific changes were made to the parks they were conducting their study at so we could more easily compare. But with the changes briefly discussed in their study (updated gyms, updated picnic areas, updated walking paths), their study showed that updated parks had no positive impact on park attendance and perceived safety (Cohen et al., 2009). It is not completely clear as to why the researchers got those findings, but possibly it could have to do with the area the parks were located, and possibly the changes to the parks were not drastic enough to attract more people. If we had a larger number of participants in our study we might have found more variation in our results. Most of our participants were in their twenties and students or faculty at Oklahoma State University, so if we were to have had more variety in the age and occupation of our participants our results could have been more varied. In a different study, researchers found that improvements to parks can and does increase park attendance. The park in which the researchers conducted their study was described to have been almost completely refurbished and updated: a dog park, an ADA accessible playground, walking track, barbeque area, fencing to keep motorists out, and new landscaping (Veitch, Ball, Crawford, Abbott, & Salmon, 2012). All of these changes led to an increase in the park attendance, and these changes were far more drastic than the prior study discussed, which found opposing results. The findings from the studies discussed show that in order to see an increase in park attendance, there may have to be very dramatic and obvious updates made to parks.

Limitations

The four main limitations for this project were time, number of participants, the range of participants, and the current Covid-19 pandemic. Time became a limitation because we were only able to perform initial surveys and many of the questions asked were surface level and not as in-depth as we would have liked. We were able to begin our study with a focus group, but there was not enough time prior to the pandemic to conduct additional, larger focus groups. The number and range of participants also presented limitations as there were only six participants in the additional focus group, and thirty participants in the survey, twenty of whom did use parks. Thirty was an appropriate number for the survey for the amount of time that we had and our experience in research, but having more participants could have strengthened the collected data and allows us to have a more in-depth analysis. Range of participants refers to the participants demographics, and acquired knowledge of active design and sustainability concepts. The surveys were distributed to students and staff of Oklahoma State University in the College of Educations and Human Sciences, where sustainability and design is a common topic of conversation, course material, and research. Had we had more members of the Stillwater community, and an even distribution of younger and older participants, we feel that our results might have been different. The Covid-19 pandemic quickly became a limitation in this study, as gathering for focus groups and park attendance was strongly discouraged to keep participants safe. We were also unable to meet as a group to work on and discuss certain aspects of this research project, but we were able to adapt and overcome this limitation through increased telecommunication.

Direction for Further Research

For future research related to this study, it would be interesting to delve in to how the recent coronavirus outbreak has impacted people's desire to get outside and be active. Many establishments like restaurants, retail stores, and even parks have been closed, and people are strongly encouraged to stay home and self quarantine. With these frustrating but necessary restrictions, people's perspectives about going outside and being active might have changed, and park attendance might increase once the restrictions are lifted. This was a topic that was considered for our study, but we thought it would be best to delve into this topic once the

restrictions are lifted to be able to more easily try to measure park attendance. Another direction for future research is conducting a similar study, if not the same study we did, but with a larger number of participants and a more varied group. This would be more representative for the community and would provide more accurate results.

Conclusion

We found that the participants in our study had a general desire for the parks in Stillwater, Oklahoma to be improved. Those improvements ranged from more parking, adding sustainable elements to the parks design, making the parks more universally designed, and even a bike sharing program. There is a perceived feeling of safety the participants said they have at the parks in Stillwater, and there was nothing identifiable that made them unsafe in any way. With the information we received from this group, we will move forward with our long term goal of gaging obesity rates in Stillwater and how we can utilize active design in our local parks to encourage more park goers.

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