Evaluating the Effectiveness of Sustainability-Based Intervention Measures on Pro-Environmental Behavior Modification at a Sporting Event

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Introduction

Problem Statement

In the face of funding cuts nationwide, universities in the United States have turned to innovative solutions to meet rising operational costs. A number of these cost-cutting, innovative practices are environmentally conscious as well as being fiscally responsible. Energy awareness campaigns, Zero Waste initiatives, and water conservation efforts are among some of the solutions universities have explored for campus application. What universities did not explore, to date, were the unexpected responses from their athletics audience. In a report examining fan engagement based on Athletic Department sustainability efforts, Casper, Pfahl, and McCullough (2014) concluded that sporting event attendees perceived sustainability efforts favorably. Simply put, people like to see sustainability. This implies sustainability solutions are not only economically and environmentally beneficial, but socially beneficial as well.

The purpose of this study is to analyze sustainability-based outreach efforts on fan attitudes and behavior through a college sporting event. In order to enhance and scale pro-environmental behavior, or sustainable behaviors, research questions guiding this study are:

1. How do sustainability-based interventions influence fan beliefs about their responsibility to the environment and behaviors toward implementing Zero Waste practices in their personal lives?

2. How are university stakeholder groups (e.g., students, faculty/staff, alumni, community members) affected by a sustainability-based intervention?

Study Rationale

Currently, since 2012, Arizona State University (ASU) has committed itself to Zero Waste. Zero Waste is a 90% aversion or diversion rate of waste from the landfill. Zero Waste
was originally piloted in 2012 by Sun Devil Athletics because athletic facilities are controllable venues that can limit waste contamination. The Zero Waste initiative is making great strides towards achieving total Zero Waste, which is a Game Day Challenge that universities compete against each other to win. However, current literature reveals a correlation between reducing waste and increasing fan patronage at college sporting events. By embedding Zero Waste values in the operational and communication infrastructures as well as incorporating said values into the Sun Devil Athletic team image, ASU can reduce costs, increase patronage, and instill sustainable behaviors into our community.

**Literature Review**

In researching the landscape of sustainable behavior modification intervention at athletic events in higher education, it became clear this is still an emerging field with new research surfacing. Because of the lack of information, this literature review will piece together what few bits of supporting research exist. This researcher aims to evaluate audience perception of Zero Waste initiative, examine how a pro-environmental initiative may increase a fan’s level of association with a team, identify what factors are missing for existing research scales to measure attitudes/behaviors, and explore leverage of potential additive behavior. The background of these various sources will provide a firm understanding of the research topic as well as frame future research questions that still need to be investigated.

**Athletic Department Finances**

According to an NCAA report on top intercollegiate athletic revenues, only about 10% of Division I athletic departments (that is, about 24 out of 230 universities) generated revenue as a result of their athletics program. The other 97% of institutions subsidize an average of 53.7% of their athletic department’s operating budgets, despite the average loss of $9,590,499 in overall
revenue (National Collegiate Athletic Association, 2014). Because of this, many institutions are already exploring pro-environmental practices for the cost-saving benefits (Casper, Pfahl, & McSherry, 2012). Casper et al.’s (2012) report along with the NCAA data mentioned above highlights the dire financial reality athletic departments operate under and underscores the importance of increasing revenue streams by increasing fan patronage (Inoue & Kent, 2012).

**Values and Perception**

Auxiliary services at the very core of their business do not directly contribute to the learning mission of a postsecondary institution. These services and/or enterprises can include Residential Life, Dining, Athletics, Parking and Transit, and Markets. Therefore, maximizing revenue justifies the auxiliary services departments and “keeping the customer happy” becomes their priority. In any business, it is important to understand the values of your audience when launching a new initiative. In 2014, Pfahl, Casper, and McCullough authored an article that focused on the correlation between athletic department efforts and fan ascription to pro-environmental values as a predictor of behavior intent. Three main conclusions about predictive pro-environmental behavior emerged from this research: 1) people generally value sustainability efforts, 2) pro-environmental behavior intent predicts behavior participation, and 3) shared pro-environmental values can predict attendance at college sporting events. These three conclusions speak to fans’ high value of sustainability efforts and the positive impact implementing these efforts can have on the 206 financially strapped Division I athletic departments identified by the NCAA. However, Casper, McCullough and Pfahl identified the existence of an ‘intention to practice’ gap present in attendees during college sporting events, which lead to fewer attendees engaging in pro-environmental behaviors than initially predicted.
Obstacles in Practice

From Casper, Pfahl, and McCullough’s (2014) study, that there is a strong positive correlation between sustainability educational outreach and fan perceptions of an Athletic department. Their study illuminated a 5% difference between attendees’ intended behavior and actual reported behavior. In the context of recycling, this difference implies that 82% attendees say they will recycle, but only 77% actually recycle. One explanation for this difference is the social structure in the sporting event environment. Kollmuss and Agyeman (2002) identified social structure as crucial to bridging the gap between intended and displayed behavior. Walton and Austin (2011) defined social structural context as “material and nonmaterial components of culture that might in some way have bearing on the execution of pro-environmental behaviors” (p. 262). The conclusion from Kollmuss and Agyeman’s work suggests embedding pro-environmental behaviors into an environment’s social identity/structure to normalize the expectation. Using their approach, an Athletics department must provide ample incentives, tailored feedback, and extensive awareness in an effort to curve existing negative knowledge and values and synchronize internal and external factors. By providing incentives, feedback, and awareness, an Athletics department can engrain pro-environmental behaviors into a sporting event culture and set the expectation for ‘what it means to be a [team name].’ Interestingly enough, Kollmuss and Agyeman also found that embedding these pro-environmental behaviors in event attendees can spawn other similar behaviors. Walton and Austin (2011) built on Kollmuss and Agyeman’s (2002) results, stating “if the social structural context of a given place facilitates pro-environmental behaviors, then people, regardless of their level of environmental concern, political affiliation, etc., are likely to execute such behaviors” (p. 279).
Another critical obstacle to the culture shift of sustainability includes getting buy-in from Athletics department staff. It would appear that Athletic department staff thinks athletics has a responsibility towards environmental issues (Casper, Pfahl, & McSherry, 2012). Unfortunately, Casper et al., (2012) found in a separate survey of university athletic programs that most Athletic departments lacked the staff to coordinate and collect actual measurements to determine whether their sustainability efforts were a success.

Another concern that emerged after reading the various studies that have been conducted is that the definition of pro-environmental have manifested differently across relevant studies. While there was not a huge variation in definitions among the several study findings, this divergence can, in theory, weaken the results overall when studies are compared against one another. Gail Markle (2013) developed the Pro-Environmental Behavior Scale (PEBS) in an attempt to standardize the definitions of “Pro-Environmental Behaviors” and strengthen the overall resolve of future study findings.

**Internalization and Association**

Research has discussed how the social structure of an Athletics department can affect fan behavior, but what is the impact of the team both on fan behavior and sustainability efforts? Per Inoue and Kent (2012), “a sport team could be an effective vehicle for promoting environmental behavior to not only its fans but also a wide range of customers” (p. 417), including but not limited to concession vendors, equipment rental companies, etc. “Regardless of whether [people] are fans of a specific team, consumers would likely perceive value congruence with the team and subsequently adopt pro-environmental behavior if the team proactively incorporates environmental practices” (p. 428). The creation of brand preference, support for brand positioning, the development of a market, and increased sales can all be benefits as a result of
voluntary pro-environmental behavior change (Kolter & Lee, 2005). These benefits are the beginning stages of developing brand loyalty among a consumer population and are great news for athletic departments across institutions, especially those that are looking for much needed addition revenue streams.

**Contribution**

In sum, there is still much to be discovered about pro-environmental behavior in Division I intercollegiate athletics. The literature uncovered that although fans positively receive sustainability efforts, their actual behavior at an event is lower than their reported intentions. Athletics departments have taken proactive approaches to control pro-environmental behavior within their facilities, but what still remains to be examined are whether these same trends extend into a sporting event attendee’s home behaviors. “Given the environmental impact of intercollegiate athletics and its high profile within the American sport industry, understanding the results of these efforts will be a telling signal as to the broader impact of sport on the environment, the development of sustainable sport management practices, and on society’s reaction to environmental degradation in general” (Casper et al., 2012, p. 23). This review of existing research provided the foundation for this study’s research questions.

**Methodology**

**Study Design**

This quantitative research study aims to evaluate the effectiveness of a sustainability-based behavior intervention model at an Arizona State University men’s basketball game by surveying two men’s basketball game attendees’ at-home pro-environmental behaviors and perceptions of the athletic department’s pro-environmental behaviors. The intervention manifests as an active engagement event, which constitutes additional pro-environmental programming at
designated sporting events. In order to gauge this intervention, I plan on surveying one passive outreach (the control) event and one active engagement (the experimental) event.

**Passive Outreach Event (Control Group).** Every athletic event at ASU is a Zero Waste Game, which refers to the fact that there are recycling and composting bins on site with branded instruction signage. When attendees need to dispose of waste, they are expected to use the signage to inform themselves how to properly sort and dispose of their waste. The word “passive” is used because attendees at these events do not engage with Zero Waste personnel, only with the Zero Waste initiative bins and signs.

**Active Engagement Event, or Signature Event (Experimental Group).** One athletic event per sport per year is selected to be the signature event for ASU’s Gameday Challenge. The word “active” or “signature” refers to the additional level of engagement on top of the standard Zero Waste bins and signage present at all events. This includes Bin Guards and “green” themed half-time shows. Bin Guards are ASU students who stand by each bin station and who have been trained to help attendees sort their waste correctly. “Green” themed half-time shows occur during the traditional half-time period to reflect various aspects of ASU’s Zero Waste commitment and increase awareness on sustainable practices.

**Survey**

The survey consists of 27 close-ended questions and 7 open-ended questions and will be administered online. The survey consists of thirty-five (35) questions, categorized under; 1) Norms, Attitudes, Efficacy, 2) Knowledge and Reasons, 3) Game and Experience, and 4) Demographics (see Appendix A). The four categories are designed to cover areas of beliefs and behaviors and while at the game while the individual questions break up the categories into
different perspectives. Organizing the survey in this fashion will give a more robust understanding of each attendee population pre- and post-game, and provide more depth when addressing the research questions. The survey questions will be hosted through the Qualtrics © online survey platform, which is optimized for both mobile device and desktop access. The analytical strategy includes comparing efficacy and education changes between the two game populations, as well as identifying any correlations between participants’ demographic variables and pro-environmental attitudes and behaviors.

When the arena opens for fan entrance, volunteers will stand at the arena entrance turnstiles, handing out flyers (see Appendix B) promoting the survey and sustainability-related giveaways to all game attendees as they enter the facility. Volunteers and instructions on the flyers will direct attendees to visit a vanity URL to take the survey, which is specific for the game they attended.

All attendees at the ASU men’s home basketball games on March 3rd, 2016 and March 5th, 2016 at the Wells Fargo Arena who are 18 years of age or older may elect to participate in this research. The March 5th ASU vs. Stanford game was selected for this study because it was already designated as the signature Zero Waste game and contained active programming about Zero Waste practices. The March 3rd game was selected because it was also a home game, it was against another California team (theoretically drawing a comparable audience demographic), and the projected attendance for both games is about the same, according to the ASU Athletics Department.

To drive participation, designer high quality reusable bags will be distributed as giveaways at the game and an incentivized drawing will be held for survey participants. After completion of the survey, participants will be forwarded to a separate form and encouraged to
enter their name and contact information if they would like to participate in the drawing. Drawing winners will be selected at random, and incentives will be sourced from Sun Devil Athletics. To be eligible in the drawing, participants must complete the survey within one (1) week/seven (7) days of the game they attended. The survey will be closed two (2) weeks after March 3rd, 2016. Delivery of the incentive will be coordinated between the winners and the study’s Principle Investigator. Resources for the volunteers will be sourced from the University Sustainability Practices office, and incentives/materials will be financially supported from either the Athletics department, or through ASU’s Graduate and Professional Student Association’s (GPSA) Athletics Research Grant competition.

The design of the survey distribution for this study was selected due to two reasons: 1) limited number of volunteers, and 2) athletic department “flow” preference. Digitizing the survey reduces the labor required to collect large quantities of survey responses and distributing a convenient flyer maximizes the number of attendees engaged with limited volunteers. By pairing the flyer with giveaways items and a prize drawing, awareness and the intended response rate can be increased without impacting the spirit of the game in a high volume environment.

**Discussion**

In the sustainability industry, a successful project benefits society, the economy, and the ecology. As colleges and universities fight against ever-waning public financial support, auxiliary enterprises/services (e.g. Athletic departments) must find innovative ways to stay ahead of the competition and increase patronage through new and creative revenue streams. Guided by this study’s research questions, the research aims to validate literature conclusions on socioeconomic trends in efficacy and increased education retention from signature events. More
importantly, this researcher hopes to confirm that pro-environmental behaviors learned/practiced at sporting events are retained and translated in attendees’ personal/home practices.

Results from this research could provide a useful roadmap for departments to achieve these three goals and ultimately elevate the sports fans game experience. The researcher’s goal is to empower athletic staff in higher education and private industry to disrupt the status quo and change the landscape of athletics to one that is more sustainably conscious civic leader. The results from this study will be published as well as presented in a poster session (see Appendix C) through the Mary Lou Fulton Teacher’s College at Arizona State University, available for the sponsoring departments to support their relevant initiatives, and accessible to the broader community to expand the idea of how sporting events can be much more than just a game.
References


Appendix A: Survey Questions

Zero Waste ’16

Q1 Please click YES, to indicate that your participation in this study is entirely voluntary, that you understand how the information will be used, and that you are at least 18 years old. You will then go to the first survey question.

☐ Yes, I provide my consent.

☐ No, I do not provide my consent.

Q2 Read each statement below and rate to what extent you agree with the following.
Recycling is important to me.
I recycle most of the time.
I try to purchase recyclable or reusable items over non-recyclable items.
Most of my friends think recycling is important.
I have a way to compost where I live.
Using only recyclable products is possible.
Protecting the environment is also a community effort.
My recycling efforts are having a positive impact on the environment.

Q10 Why do you recycle? (Check all that apply)

☐ To save the planet's resources
☐ Reduce waste sent to the landfill
Protect the environment

Good for the economy

Concerned about climate change

I've done it my whole life

Other ______________________

I don't recycle

Q11 What do you recycle? (Check all that apply)

Glass

Metal/Cans

Paper/Newspapers

Cardboard

Hard Plastics (e.g. milk jugs)

Soft Plastics (e.g. plastic bags)

Batteries

Food (e.g. composting)

Electronics

Other: ______________________

I don't recycle

Q12 Where do you recycle the most frequently? (choose ONE that applies best to you)

Where I live

Where I work/go to school
Where I socialize/go to have fun

- At events, concerts, or games
- City/town drop-off facilities
- Other: ____________________
- I don't recycle anywhere

Q13 If you are not sure whether something is recyclable, where do you usually get more information? (Check all that apply)

- Online
- A family member
- A friend/neighbor
- School/class
- Work
- From the city where I live
- From some information provided at another event
- Other: ____________________
- I don't recycle/get recycling information

Q14 Do you remember attending an ASU men's basketball game between March 2\textsuperscript{nd} and March 6\textsuperscript{th}? 

- Yes
No

Answer: If you remember attending a men's basketball game last week? Yes Is Selected

Q15 Which game did you attend?

- ASU vs. California: March 5th, 2016

Q16 Did you participate in any of the following activities at the game? (Check all that apply)

- Recycling
- Composting
- Viewed Zero Waste promotional on social media
- Read about the Zero Waste initiative
- Other: ____________________
- None of the above

<page break>
Q17 After attending the event, please rate to what extent you *agree* with the following.

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Somewhat agree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun Devil Athletics should be recycling/composting.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I think Sun Devil Athletics is making adequate efforts to recycle.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Recycling at the game enhances my experience.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I know what items were recyclable/compostable at the game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I saw people recycling at the game.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I believe recycling at Wells Fargo Arena has a positive impact on Zero Waste goals.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Recycling at the game inspired me to recycle more frequently at home/work/school.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Because of what I learned at the event, I feel better able to educate others about Zero Waste. I feel proud to be a Sun Devil fan because of ASU’s Zero Waste values.

Q26 After attending the event, which of the following do you have a better understanding about? (Check all that apply)

- Recycling at the game
- Recycling at home
- Composting at the game
- Composting at home
- ASU’s zero waste goals
- ASU’s zero waste efforts
- Other: ____________________
- None of the above

Q27 Are you a men's basketball season ticket holder?

- Yes
- No, and I'm not interested
No, but I used to be
No, but I want to be

Q28 What gender do you identify as?
- Male
- Female
- Other
- Prefer not to answer

Q29 How old are you?
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 +

Q30 What race and/or ethnicity do you identify as? (Check all that apply)
- African American
- American Indian
- Asian
- Pacific Islander
- Hispanic
Caucasian

Other: ____________________

Q31 What best reflects you currently?

- 1st year undergraduate student
- 2nd year undergraduate student
- 3rd year undergraduate student
- 4th year undergraduate student
- 5th year undergraduate student
- Graduate student
- ASU Faculty
- ASU Staff
- ASU Alumni
- Family member of an ASU student
- ASU fan living in AZ who does not attend or work at ASU
- ASU fan or visitor who does not live in AZ

Q32 I live in...

- An on-campus residence hall
- A rented off-campus apartment
- A rented off-campus house
- A private condo I own
- A private house I own
My parent's/relative's home

Q33 I live...

- With a roommate(s)
- Alone
- With family/relatives

Q34 What is the highest level of education you have obtained?

- Less than high school
- High school graduate
- Some college
- 2 year degree
- 4 year degree
- Professional degree
- Graduate degree

Q35 How many athletic events at ASU (e.g. football, wrestling, gymnastics, water polo, etc.) have you attended in the last year?

- 1 - 2
- 3 - 4
- 5 - 6
- 7+
<end of survey>
Appendix B

March 3rd, 2016 Game Flyers: Stanford
BE THE HERO
share your thoughts and WIN!

Enter now! links.asu.edu/California

ZERO TO HERO

Share your thoughts and WIN!

Zero Waste at ASU wants to hear from YOU!

Only 15 minutes!

Supporting research has never been so easy!

Enter to win great prizes like

ASU Baseball Tickets
Solar Charger

Enter now! links.asu.edu/California

Research Sponsored by:

Zero Waste
ASU Athletics
SUN DEVIL ATHLETICS

Complete by Thursday, March 12th to be eligible

March 5th, 2016 Game Flyers: California
Evaluating the effectiveness of educational outreach on sustainable behavior modification at a sporting event

Kendon M. Jung • IRB Human Research Certified • Mary Lou Fulton Teachers College • Arizona State University

Introduction

In the face of funding cuts nation wide, universities have turned to innovative solutions to meet the rising operational costs. Power Purchase Agreements (PPA) and other similar arrangements leverage extended return on investment (ROI) and federal rebates, making these innovative and sustainable solutions quite appealing to fiscally conservative universities in desperate need of capital improvements. Energy awareness campaigns, Zero Waste initiatives, and water conservation efforts are some of the many ways many universities supplement their innovative cost-saving solutions, but require a high level of community engagement.

In a report examining fan engagement based on Athletic Department sustainability efforts, Casper, Platt, and McCullough came to the conclusion that event attendees perceived sustainability efforts favorably. Simply put, people like to see sustainability. This implies these sustainability solutions are not only economically and environmentally beneficial, but socially beneficial as well. If universities are expending resources to engage the community on sustainability practices, it is imperative to the mission of the institution that outreach efforts are making a positive impact.

Design

Design and Distribution
- Design flyers and survey questions
- Develop response collection infrastructure

Coordinate Signature Event
- Green Half-time Show
- Bin Guards
- Study Volunteers

Engage and Collect
- Distribute physical flyers
- Send electronic invitations
- Collect results and select winner

Questions

The purpose of this study is to evaluate whether educational outreach is affecting sustainable behavior modification. In order to enhance and scale sustainable behavior, there are several questions to answer:

1. Does outreach messaging impact attendee behavior?
2. Is active outreach more effective than passive messaging?
3. What are the challenges to event outreach?
4. When, where, and to what extent is behavior changed?
5. What social class shows the highest adoption rate?

Sampling

Athletics and their facilities were selected as pilots because of their high profile, heightened potential engagement, and ability to control their environment. This pilot will evaluate passive outreach (i.e. signage and separated waste bins) and signature event programming (i.e. “Green” themed games/half-time shows). Below are the top three attended athletic facilities at Arizona State University.

Wells Fargo Arena was selected as the primary sample location due to study timing and basketball season. A survey will be sent via email to attendees or handed out as flyers at the targeted passive and signature games.

Expected Results

Click on or navigate through the QR Code for more information on:
- IRB Approval
- Funding Sources
- CITI Certification
- Collateral
- Participant Privacy
- References

Appendix C

Click here to view a high definition copy.