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CONTENTS	PAGE
Editorial Board	iii
Exploring Career Maturity: A Comparison of Student-Athletes and Non-Athletes at a Division I Institution	1
<i>Walter L. Tarver, III</i>	
Signalling Expertise in Sport Entrepreneurship: A Mixed-Methods Approach Using Topic Modeling and Thematic Analysis	23
<i>Ted Hayduck III and Brianna Newland</i>	
A Case “Fore” Buffer Zones	36
<i>Natalie Bird and Nicholas Schlereth</i>	
An Examination of Travel Effects on Performance Outcomes in Major League Soccer	46
<i>Evan J. Gilbert, Jess C. Dixon, and Todd M. Loughead</i>	
The Use of Season Ticket Incentives In Major League Baseball	60
<i>Kaitlin Poe and John Drea</i>	
To Serve and Protect: Examining the Relationship between Selling Alcohol in College Football Venues and Negative Fan Behaviors	73
<i>Nels Popp, Archer Bane, Steven M. Howell, and Barbara Osborne</i>	
Guidelines for Contributors	83

Exploring Career Maturity

A Comparison of Student-Athletes and Non-Athletes at a Division I Institution

Walter L. Tarver, III

Abstract

This quantitative study compared the career maturity of student-athletes and non-athletes at a Division I university, and assessed career maturity differences among student-athletes. Super's Theory of Career Development served as the theoretical framework, while the Career Maturity Inventory-Revised Attitude Scale (CMI-R/AS) was utilized to collect data. Student-athletes were found to exhibit lower levels of career maturity than non-athletes. Among student-athletes, males scored lower on career maturity than females. Additionally, those identifying more closely with their athletic identities, those with higher aspirations to play professional sports, those with stronger beliefs in the likelihood that they would play professional sports, and those competing in revenue sports (football and men's basketball) had lower levels of career maturity. Finally, as year of athletic eligibility increased, student-athletes' career maturity increased.

Keywords: *Career maturity, student-athletes, non-athletes, Career Maturity Inventory-Revised Attitude Scale (CMI-R/AS)*

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Introduction

There are approximately 500,000 student-athletes at over 1,100 American colleges and universities (NCAA, 2017a). However, less than 2% of them will be drafted to play a professional sport (Brower, 2015; Mirabile & Witte, 2013; NCAA, 2017b; Tyrance et al., 2013). Additionally, some are ill prepared to pursue career opportunities beyond those as professional athletes (Brower, 2015; CNN, 2014; “Universities fail student athletes,” 2014). What happens to those who fail to realize their professional sports dreams? According to the National Collegiate Athletic Association (NCAA), most of them will pursue careers in something other than sports (NCAA, 2014). Are they prepared to do so, though?

The purpose of this study was twofold. First, it sought to compare student-athletes’ career maturity to their non-athlete peers. Next, it sought to assess whether or not there were any differences in career maturity among student-athletes.

Literature Review

Super’s Theory of Career Development

Super purports that individuals go through five developmental phases: growth, exploration, establishment, maintenance, and decline (Gies, 1990; Super, 1957). During growth, people develop their self-concepts and attain knowledge about careers (Luzzo & Severy, 2009). Exploration involves actively investigating careers that range from idealistic to realistic (Gies, 1990). Establishment is where individuals focus on establishing themselves in careers (Kosine & Lewis, 2008) and assessing their career choices (Gies, 1990; Luzzo & Severy, 2009). Maintenance involves individuals pursuing similar careers in other organizations or changing careers altogether (Kosine & Lewis, 2008). Finally, decline is akin to preretirement (Gies, 1990). Individuals may transition into new careers (Gies, 1990), but retirement is the eventual outcome (Gies, 1990; Luzzo & Severy, 2009).

Career Maturity

Super linked individuals’ ability to progress through the career development process to their career maturity (Super, 1957), defined as their level of awareness and knowledge of the process related to making sound career decisions (Levinson et al., 1998). Furthermore, it is described as a group of actions required to recognize, select, plan, and implement career goals (Coertse & Schepers, 2004).

Those who exhibit the appropriate level of career maturity are able to collect information that helps them understand themselves, make informed career choices, assimilate knowledge of self and work, and integrate everything into the career decision making process (Super, 1957). Super summarized career maturity as existing along five dimensions: planfulness, exploration, information gathering, decision making, and reality orientation (Coertse & Schepers, 2004; Lau et al., 2013). See Table 1.

Table 1*Super's Five Dimensions of Career Maturity*

Dimensions of Career Maturity	Definition
Planfulness	The capacity to formulate a career plan and apply it in an operational manner.
Exploration	The act of questioning one's self-concept and one's career situation, and gathering information based on this self-concept, through the use of career resources and participation in social institutions.
Information Gathering	The ability to collect information about the workplace, work preferences, and non-work roles.
Decision Making	The ability to select careers grounded in sound, informed decision-making processes.
Reality Orientation	The ability to develop a strong understanding of oneself, while being rational about available career alternatives, and establishing stable career preferences based on well-defined values, interests, objectives, and the development of substantive work experiences.

CMI-R/AS

The CMI-R/AS measures career maturity along: orientation, involvement, independence, compromise, and decisiveness (Busacca & Taber, 2002) (See Table 2). The instrument consists of 25 statements. Each statement has a value of zero or one, with total scores ranging from zero to 25. Scores of 20-25 indicate high career maturity, scores ranging from 16-19 indicate normal career maturity, while scores of 15 or lower indicate low career maturity (Busacca & Taber, 2002). The CMI-R/AS is provided in Appendix A.

The CMI-R/AS has proven to be a valid and reliable instrument. Each of its scale items were based on the 1978 version of the Career Maturity Inventory (CMI) (Crites & Savickas, 1996), which was found to be reliable and valid (Crites, 1978b). The CMI-R/AS's use in studies comparing student-athletes to non-athletes has been noted, and has further confirmed its validity and reliability (Ahlgren, 2001; Busacca & Taber, 2002; Hill, 2001; Hinsey, 2015; Linnemeyer & Brown, 2010; Rivas, 2002). As suggested by Super, the measures of the CMI-R/AS are closely linked to successful career outcomes resulting from the congruence between one's vocational maturity and one's personal reality (See Figure 1).

Table 2

Attitude Scale Variables Defined

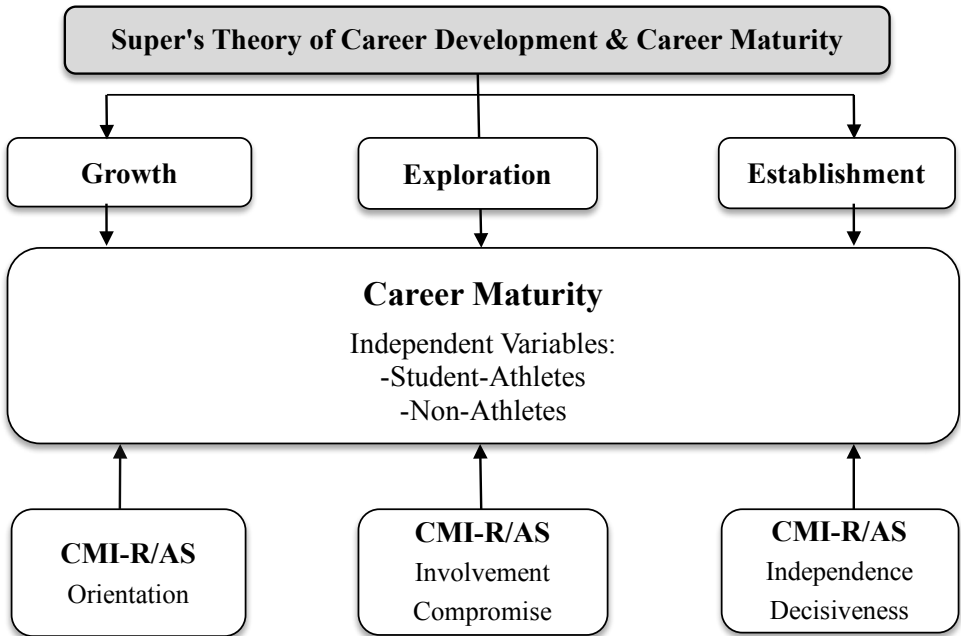
Attitude Scale Variables	Definition
Orientation	The aptitude and awareness an individual has towards the process of making an occupational choice and the variables that enter into that choice.
Involvement	The degree to which one is engaged in the decision-making process.
Independence	The extent to which one is able to make autonomous choices as part of the decision-making process.
Compromise	The extent to which one is open to varying choices and alternatives that present themselves during the career decision-making process.
Decisiveness	The level to which one is confident in one's ability to make career-related decisions.

Overview of Relevant Studies

Various studies have compared the career maturity of student-athletes in the revenue sports to their non-athlete peers, and found student-athletes to be less career mature (Ackerman, 2017; Clark, 2017; Hill, 2001; Houle & Kluck, 2015; Smallman & Sowa, 1996). In another study, student-athletes in the revenue sports failed to have viable career plans at the culmination of their college experience (Navarro, 2014). This aligns with the idea that their focus is on playing professional sports (Cox et al., 2009; NCAA, 2015).

Research around gender and the career maturity of student-athletes has been inconsistent (Parietti et al., 2016). One realm of the literature noted that Division I female student-athletes exhibited higher levels of career maturity than male student-athletes (Ackerman, 2012; Clark, 2017; Houle & Kluck, 2015; Murphy et al., 1996). Other studies however, found female student-athletes to exhibit lower levels of career maturity compared to male student-athletes (Parietti et al., 2016; Tyrance et al., 2013).

Along race/ethnicity, a few studies found no significant relationship between race/ethnicity and career maturity (Ahlgren, 2001; Beamon, 2012; Harrison, Jr., et al., 2013; Tyrance et al., 2013). However, Houle (2010) found that Caucasian student-athletes possessed higher levels of career maturity than African-American student-athletes. Among those who expected to play professional sports, African-

Figure 1*Super's Theory of Career Development and Career Maturity*

American student-athletes exhibited lower levels of career maturity than Caucasian student-athletes (Hill, 2001).

As it relates to identity, previous studies found no connection between college student-athletes' identities and their career engagement (Brown & Hartley, 1998; Martens & Cox, 2000). In contrast, student-athletes who identified more highly with their athletic selves, did not engage in career exploration activities outside of sports (Burns et al., 2012; Houle, 2010; Houle & Kluck, 2015; Poux & Fry, 2015). This was especially the case for football, basketball, and baseball players, who tended to concentrate on pursuing professional sports careers while ignoring other career options (Cox et al., 2009). Additionally, student-athletes who identified more closely with their athletic selves rejected career development altogether, to engage in their sport (Houle & Kluck, 2015).

Finally, some studies found no significant link between class level and career maturity. There was no relationship between career maturity and class level among Division I swimmers and gymnasts (Dailey, 1995). Smallman and Sowa (1996) yielded the same findings in their study of male student-athletes. Conversely, a study of Division I freshmen and senior student-athletes found that seniors had higher levels of career maturity (Ahlgren, 2001).

Purpose and Hypotheses

This study set out to examine the career maturity of Division I student-athletes in comparison to non-athletes, and to assess whether or not there were differences in career maturity within the student-athlete population. Based on the literature, the following were hypothesized:

- H₁: Student-athletes will exhibit lower career maturity than non-athletes.
- H₂: There will be no difference in career maturity between female and male student-athletes.
- H₃: Caucasian student-athletes will exhibit higher career maturity than African American student-athletes.
- H₄: Student-athletes' career maturity will increase as their years of athletic eligibility increase.
- H₅: Student-athletes who identify more highly with their athletic identities will exhibit lower career maturity than other student-athletes.
- H₆: Student-athletes in revenue sports will exhibit lower career maturity than those in non-revenue sports.
- H₇: Student-athletes with higher beliefs in the likelihood that they will play professional sports will exhibit lower career maturity than other student-athletes.
- H₈: Student-athletes with professional sports aspirations will exhibit lower career maturity than other student-athletes.

Methodology

This study took place at a Division I university in the southeastern region of the United States. There were 468 student-athletes from 16 varsity sports (seven men's sports and nine women's sports) and over 27,000 non-athletes. As student-athletes represented less than 2% of the population, disproportionate allocation between-strata sampling strategy was used. It allows researchers to select the same number of individuals for each subgroup (Daniel, 2012).

The researcher utilized a site administrator to obtain the e-mails of all student-athletes and non-athletes. All 468 student-athletes were selected to participate, while Excel was utilized to randomly select 468 non-athletes. The researcher crafted an email for the site administrator to use to recruit subjects for the study, including a letter of informed consent, the anonymous link to the online CMI-R/AS, and the accompanying demographic and supplemental questions.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. Descriptive statistics were calculated across the categorical variables. To address H_1 , An independent t -test was run, with athletic status as the independent variable, and career maturity as the dependent variable. For H_2 , a one-way ANOVA was run with gender and athletic status as a combined independent variable and career maturity as the dependent variable. As it relates to H_3 , the variances for each race/ethnicity category were disproportionate. Thus, race/ethnicity was converted into a new independent variable consisting of two levels, Caucasian and non-Caucasian, and was run as part of an independent t -test, with career maturity as the dependent variable. For H_4 , H_5 , H_7 , and H_8 , one-way ANOVAs were run with athletic eligibility, identity, belief in the likelihood of playing professional sports, and professional sports aspirations as the independent variables and career maturity as the dependent variable. Finally, for H_6 , a means comparison by sport was run.

Findings

Based on a quantitative analysis of the results, there were several findings. To begin with, student-athletes ($CM=17.7$, $SD=5.15$) scored lower on career maturity than non-athletes ($CM=19.3$, $SD=5.18$). The difference was statistically significant ($t(280) = -2.59$, $p = .01$) and supports H_1 , which states that student-athletes will have lower career maturity than non-athletes.

Also, there was a significant difference in career maturity along gender and athletic status ($F(3, 278) = 22.33$, $p = .00$). Specifically, female student-athletes ($CM=20.9$, $SD=3.4$) exhibited higher levels of career maturity than male student-athletes ($CM=14.9$, $SD=4.9$). This does not support H_2 , which posits that there will be no difference in career maturity between female student-athletes and male student-athletes.

As it relates to H_3 , which states that Caucasian student-athletes will exhibit higher levels of career maturity than African-American student-athletes, differences could not be adequately captured. Due to disproportionality, the race/ethnicity variables had to be collapsed into two levels (Caucasian and Non-Caucasian). As such, H_3 could not be supported.

For the remaining hypotheses, Table 3 illustrates the mean career maturity levels for the variables linked to them. The findings are summarized as follows. First, the difference in career maturity along year of athletic eligibility and athletic status was significant ($F(4, 114) = 6.71$, $p = .00$). Most notably, the largest variation occurred when there was minimally a two-year difference in athletic eligibility. This supports H_4 , which states that student-athletes' career maturity will increase as their year of athletic eligibility increases. A difference in career maturity based on identity was also confirmed to be significant ($F(2, 116) = 124.83$, $p = .00$), thereby supporting H_5 , which states that student-athletes who identify more

highly with their athletic identities will exhibit lower career maturity than other student-athletes.

With respect to H_6 , which states that student-athletes in revenue sports (football and men's basketball) will exhibit lower career maturity than those in non-revenue sports, football players ($CM=11.3$, $SD=1.1$) were found to have the lowest career maturity. However, basketball players ($CM=14.9$, $SD=2.6$) exhibited higher career maturity levels than those in the non-revenue sport of baseball ($CM=12.4$, $SD=3.0$). Thus, H_6 was not fully supported.

Next, there was a significant interaction of the effect of belief in likelihood of playing professional sports on career maturity ($F(2, 116) = 12.30$, $p = .000$). Student-athletes with a high belief in the likelihood of playing professional sports scored significantly lower on career maturity than their athlete peers. This supports H_7 , which states that student-athletes with higher beliefs in the likelihood of playing professional sports will exhibit lower career maturity levels.

Finally, a significant difference in career maturity was found between student-athletes with professional sports aspirations and other student-athletes ($F(2, 116) = 12.30$, $p = .000$). Those with professional sports aspirations exhibited lower levels of career maturity. This confirms H_8 , which states that student-athletes with professional sports aspirations will exhibit lower career maturity levels than other student-athletes.

Discussion and Implications

Super believed that outcomes linked to one's ability to navigate the career development process were firmly linked to their level of career maturity (Super, 1957). Thus, he would attribute student-athletes lagging behind non-athletes in their career maturity to the absence of necessary characteristics associated with the career planning process. As it applies to the findings in this study, the following explores Super's theory in greater perspective.

Super's theory dictates that student-athletes' lower career maturity levels are linked to their inability to develop their self-concepts. This is the first key phase of the career development process. This would especially be the case for those student-athletes whose self-concepts are grounded in their athletic identities. Also, the confined culture in which student-athletes exist limits their exposure to career development activities. As Cox et al. (2009) state, intercollegiate athletics is structured in a way that prohibits student-athletes' academic and vocational development. Furthermore, the excessive time demands placed on student-athletes also serve as a potential obstacle, with them spending on average of 20 to 30 hours per week in their respective sports (Tyranse, 2010). This is especially relevant for those student-athletes in revenue sports and those with strong beliefs in the likelihood they will play professional sports (Cox et al., 2009; Griffith & Johnson, 2002).

Table 3*Career Maturity: Student-Athlete Demographic Variables*

Variable	Category	M	SD	SEM
Year of Athletic Eligibility	1st Year	14.0	3.44	.77
	2nd Year	16.6	5.12	.88
	3rd Year	19	5.03	.79
	4th Year	19.6	4.85	1.11
	5th Year	22.7	2.71	1.10
Identity	Athlete	12.1	2.24	.34
	Student	20	3.27	1.15
	Student-Athlete	21.1	3.25	.39
Sport	Baseball	12.4	3.01	1.00
	Men's Basketball	14.9	2.57	1.15
	Women's Basketball	18.1	5.91	3.41
	Football	11.3	1.12	.22
	Men's Golf	18.9	1.75	1.01
	Women's Golf	19.8	.57	.40
	Rowing	21.6	2.32	.64
	Soccer	22.2	3.50	1.24
	Softball	19.2	4.30	1.43
	Men's Swimming & Diving	16.5	2.74	1.23
	Women's Swimming & Diving	21.7	2.93	2.93
	Men's Tennis	19.4	4.16	2.08
	Women's Tennis	20.9	.14	.10
	Men's Track & Field/CC	23.2	1.58	.56
	Women's Track & Field/CC	21.7	4.31	1.63
Volleyball	18.6	1.32	.66	
Professional Sports Aspirations	Yes	16	5.54	.68
	No	20.5	3.42	.50
	Unsure	17	2.49	1.02
Likelihood of Playing Professional Sports	Highly Likely	13	3.59	.57
	Likely	17.6	5.62	1.40
	Neutral	18.3	4.02	1.34
	Unlikely	22	2.52	.63
	Highly Unlikely	20.8	3.29	.53

Note. M indicates mean. SD indicates standard deviation. SEM indicates standard error of mean.

Looking more closely at those student-athletes in the revenue sports, they believe they have a high likelihood of playing professional sports. Super would explain their low levels of career maturity by the fact that they are generally closed off to other careers. Thus, they do not develop strong self-concepts, something specific to sound career decision making. It could also be stated that identity plays a role here, as these student-athletes would tend to exhibit above average attachments to their athletic selves.

An additional factor to consider is what happens when a student-athlete has the realization that he or she is not going to play professional sports, even though his or her career aspirations were originally targeting that path. Super coined a term called minicycling, which refers to individuals revisiting some phases of the career development process (Kosine & Lewis, 2008). This minicycling concept is applicable to year of eligibility as well. As the results of this study demonstrated, as year of eligibility increased, career maturity increased, especially if there was a minimum of a two-year difference in eligibility. Super's theory supports the belief that student-athletes originally exhibiting lower levels of career maturity would see gradual increases in career maturity due to the sudden necessity of having to engage in the career development process.

Subsequently, this study could have significance for student-athletes, career advisors, and athletic department administrators. First, it could encourage student-athletes to be more proactive in developing secondary career plans. Additionally, it could inform the work of career advisors as they develop programs and services for student-athletes. Finally, this study could enlighten athletic department administrators as to the necessity of ensuring that their student-athletes are prepared for the transition into life after sports.

Limitations and Future Research

One limitation was that most of the participants self-identified as Caucasian/Non-Hispanic. This made it difficult to draw substantive conclusions about career maturity along race/ethnicity. Another limitation was that only four of the 16 sports had enough participants to generalize across sports (See Table 4). Finally, when the survey was administered, 13 of the 16 sports were in season, which may have impacted response rates.

Future research could include conducting this study at multiple institutions across Division I, II, and III. Looking at multiple institutions might yield a large enough number of participants for each sport, thereby providing a more in-depth analysis across variables. Also, a qualitative study asking former student-athletes to revisit their level of career readiness and their participation in the career development process, as it relates to non-playing careers, might yield some useful data.

Table 4*Frequencies by Sport*

Variable	Frequency	Percent
Sport Type		
Baseball	9	7.0
Men's Basketball	5	4.0
Women's Basketball	3	2.0
Football	27	22.0
Men's Golf	3	2.0
Women's Golf	2	2.0
Rowing	13	10.0
Soccer	8	6.0
Softball	9	7.0
Men's Swimming & Diving	5	4.0
Women's Swimming & Diving	11	9.0
Men's Tennis	4	3.0
Women's Tennis	2	2.0
Men's Track & Field/Cross Country	9	7.0
Women's Track & Field/Cross Country	10	8.0
Volleyball	4	3.0

Conclusion

The findings have practical application for advancing the work of higher education administrators with respect to preparing student-athletes for life after sports. As a result of this study, the researcher crafted the Athlete Career Enrichment (ACE) Program to address the career planning needs of student-athletes. By establishing a partnership between campus career services and athletics, ACE can focus on closing the career maturity gap between student-athletes and non-athletes as well as the one that exists among student-athletes. The following provides a snapshot of the ACE blueprint.

First, student-athletes would be required to attend an ACE Program orientation as part of their sports' pre-season activities. They would receive a program overview, complete a career maturity assessment, and be matched with a career advisor. At the end of the pre-season, student-athletes would meet with their assigned career advisors to discuss their career maturity assessment results.

Next, career advisors would work with their assigned student-athletes to map out viable career plans. They would track their progress throughout their college experience, with regular individual and group check-ins. Career advisors would also collaborate with athletics to ensure that career development programming

is implemented in a manner that accommodates student-athletes' demanding schedules.

At the end of the academic year, career services and athletics will partner to prepare a year-end report. The report would summarize the workshops and events offered, the number of career advising sessions conducted, an assessment of the overall effectiveness of the program, and a synopsis of any other major career planning activities that took place.

Subsequently, the ACE Program could serve as a guide for serving student-athletes' career needs. While some student-athletes will have the opportunity to play professional sports, the majority will not be so fortunate. This could facilitate increased student-athlete engagement in the career development process and change how they view their career development, thereby affecting more positive career outcomes as they manage the transition into life after sports.

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Appendix A

Career Maturity Inventory–Revised Attitude Scale (CMI –R/AS)

Please read each statement carefully and indicate your level of agreement (Strongly Agree, Agree, Neither Agree or Disagree, Disagree, or Strongly Disagree).

1. Everyone seems to tell me something different; as a result, I don't know what kind of work to choose.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

2. It's probably just as easy to be successful in one occupation as it is in another.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

3. I have little or no idea what working will be like.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

4. Once you choose a job, you can't choose another one.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

Career Maturity and Student-Athletes

5. I keep wondering how I can reconcile the kind of person I am with the kind of person I want to be in my future occupation.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

6. Sometimes you have to take a job that is not your first choice.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

7. Work is dull and unpleasant.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

8. I can't understand how some people can be so certain about what they want to do.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

9. As far as choosing an occupation is concerned, something will come along sooner or later.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

10. Choosing an occupation is something you have to do on your own.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

11. As long as I remember, I've known what kind of work I want to do.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

12. There may not be any openings for the job I want most.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

13. I don't know how to go about getting into the kind of work I want to do.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

14. There is no point in deciding upon a job when the future is so uncertain.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

15. I spend a lot of time wishing I could do work I know I can never do.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

16. If someone would tell me which occupation to enter, I would feel much better.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

17. I know very little about the requirements of the job.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

18. When choosing an occupation, you should consider several different ones.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

19. There is only one occupation for each person.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

20. The best thing to do is to try out several jobs, and then choose the one you like best.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

21. You get into an occupation mostly by chance.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

22. I seldom think about the job I want to enter.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

23. You almost always have to settle for a job that's less than you had hoped for.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

24. I really can't find any work that has much appeal to me.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

25. I'd rather work than play.

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

Demographic/Supplemental Questions

Q1 What gender do you most identify with?

Male

Female

Other: _____

Q2 Which most accurately reflects your class level?

Freshman

Sophomore

Junior

Senior

Graduate Student

Q3 Which of the following most closely describes your race/ethnicity?

Caucasian/Non-Hispanic

African/Black American

Hispanic/Latino

Asian/Pacific Islander

Native American

Other: _____

Q4 Are you a varsity student-athlete?

Yes

No (If no, skip to "Question #13.")

Q5 Are you receiving any type of scholarship?

Yes

No

Q6 What is your year of eligibility?

1st year

2nd year

3rd year

4th year

5th year

6th year

Q7 Which do you identify with the most?

Being an athlete

Being a student

Being a student-athlete

Other: _____

Q8 What sport(s) do you compete in?

Baseball

Men's Basketball

Women's Basketball

Football

Men's Golf

Women's Golf

Rowing

Soccer

Softball

Men's Swimming & Diving

Women's Swimming & Diving

Men's Tennis

Women's Tennis

Men's Track & Field/Cross Country

Women's Track & Field/Cross Country

Volleyball

Q9 Do you have professional sports aspirations?

Yes

No

Unsure

Q10 How would you rate your likelihood of playing professional sports?

Highly unlikely

Unlikely

Neutral

Likely

Highly likely

Q11 Other than being a professional athlete, what other job do you aspire to do?

Q12 Who has been most beneficial to you as it relates to thinking about your future?

Q13 Have you experienced any unforeseen circumstances that have impacted your responses to this survey?

Yes (If yes, please describe briefly below.)

No

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY.

Signalling Expertise in Sport Entrepreneurship

*A Mixed-Methods Approach Using Topic Modeling
and Thematic Analysis*

Ted Hayduk III
Brianna Newland

Abstract

Despite the recent importance of technological entrepreneurship to sport business, very little is known about the entrepreneurs who are actively defining this new landscape. And, given that effective communication is essential to a thriving entrepreneurship ecosystem, it is important for investors to understand who sport entrepreneurs are and how they position themselves to the world. This will help create a sport business landscape that is receptive to new technologies and supportive of the entrepreneurs who champion them. Thus, the purpose of this paper is to illuminate how sport entrepreneurs communicate with potential investors. To do so, the paper employs a mixed-methods approach, using a natural language processing algorithm to decipher themes in the entrepreneurs' self-reported biographies, followed by a qualitative investigation that uncovers how each theme was leveraged.

Keywords: *Business, communication, finance, investing, relationships, technology*

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Entrepreneurship is defined as market-altering creative destruction (Schumpeter, 1934). Creative destruction occurs when new technologies are introduced into product development or business processes. Creative destruction brakes down inertial forces that dictate a market's status quo. This process occurs in two steps. First, an entrepreneur recognizes the opportunity by identifying market inefficiencies. Second, they decide to exploit the opportunity by redirecting corporate resources or starting a new business. The benefits of entrepreneurship are numerous and well documented. Scholarship acknowledged that entrepreneurship was generative of competitive advantage and increased market share for firms. Entrepreneurship also increases employment and standards of living for regions (Luke et al., 2007). In developed economies with formalized institutions, entrepreneurship led to increases in GDP growth rate (Valliere & Peterson, 2009). New-venture entrepreneurship in particular (as opposed to innovation entrepreneurship—defined as being “entrepreneurial” within a large firm) was positively related to GDP growth rate (Tang & Koveos, 2004).

Recently, scholarship began to acknowledge the overlap between sport and entrepreneurship (e.g., Ball, 2005; Hemme et al., 2017; Ratten, 2011). Both phenomena occurred throughout human history irrespective of time, geography, and culture; both are imbedded in what it means to be “human” (Ratten, 2011). Additionally, sport often required the proactivity, resilience, and risk taking emblematic of entrepreneurship. Ratten and Ferreira (2016) indicated that entrepreneurship allowed sport organizations to improve performance on the field of play, increase fanbases, procure additional services, and optimize revenue. Currently, entrepreneurship bolstered by new technologies has affected the business of sports. Technological entrepreneurship shifted the tides of demand and redefined supply chains overnight. New technologies are salient because the sport industry's value chain is instantaneous; games are produced, packaged, distributed, and consumed simultaneously (Gershon, 2013). These new technologies affect all areas of sport business, and examples include consumer analytics, virtual and augmented reality, mobile applications, social media marketing, and digital streaming.

Despite the importance of entrepreneurship to the business of sports, significant gaps exist in the literature. While work has addressed the conceptual underpinnings of sport entrepreneurship (Ball, 2005; Ratten, 2011; Ratten & Ferreira, 2016), fewer studies examined the practicalities of entrepreneurship in sport business. One of the largest areas of need is to understand the communicative processes between sport entrepreneurs and the entrepreneurial ecosystem (Ratten, 2016). Understanding the mechanisms governing the exchange of information between sport entrepreneurs and other stakeholders is important because successfully reducing information asymmetries encourages collaborative value-generation in an industry (Schumpeter, 1934). Thus, understanding who sport entrepreneurs are and how they communicate is imperative for procuring a sport business landscape that is advantageous for entrepreneurs and hospitable to the technologies they bring with them.

Entrepreneurial Communication and Signaling Theory

Entrepreneurs' communication with outside stakeholders has frequently been discussed using signaling theory. Connelly et al. (2011) explained how signaling theory is useful when information exchange between two parties is required, but both parties possess different amounts and types of information. To facilitate communication, the sender chooses how to communicate the desired information using signals, and the receiver chooses how to decode them. Signaling theory has been explored in a range of management contexts, including strategic management (Zhang & Wisrsema, 2009), human resource management (Highhouse et al., 2007), and entrepreneurship (Alsos et al., 2016; Eddleston et al., 2016; Giones & Miralles, 2015).

In entrepreneurship, the sender is nearly always an entrepreneur, and the receivers are potential investors or advisors (Connelly et al., 2011). Ideally, when signals are sent and received successfully, the investor chooses to pursue a relationship with the entrepreneur. A range of forces can affect the success of the signaling process, among which are characteristics of the receiver (Gulati & Higgins, 2003), the signal (Filatotchev & Bishop, 2002), the signaling environment (Janney & Folta, 2006), the industry environment (Sanders & Boivie, 2004), feedback loops (Gammoh et al., 2006), organizational and institutional cultures (Highhouse et al., 2007), and the sender (Ndofor & Levitas, 2004). Thus, there are a range of things that can hinder entrepreneurs in their quest to send clear, convincing signals.

Signaling Theory and Sport Entrepreneurs

There has been increasing attention in entrepreneurship devoted to understanding how characteristics of senders affect their signals' perceived quality and resonance. Some of these characteristics include educational attainment (Van Der Sluis et al., 2004), credibility (Certo et al., 2001), and gender (Alsos et al., 2016, Eddleston et al., 2016).

Research also found that differences in these characteristics induce different types of signals (Eddleston et al., 2016). Entrepreneurs of disparate backgrounds, career experiences, educational pedigrees, or genders send signals that are in part determined by these traits. Such an assertion is consistent with socialization theories of human interaction and development (Maccoby, 2007). In particular, research has investigated the signals sent by male versus female entrepreneurs and how they are received (Alsos et al., 2016; Cassidy et al., 2016; Eddleston et al., 2016; Giones & Miralles, 2015; Martel et al., 2012). This work noted that signals sent by males and females differed in their execution, despite the entrepreneurs' common goals. Given that the business of sport is susceptible to masculine- and hetero-normativity (Burton, 2015; Cunningham & Melton, 2013; Walker & Melton, 2015), it follows that male and female sport entrepreneurs may send different signals to potential investors. Given the nascent state of scholarly work in this area, the purpose of this descriptive study was to identify the shared and dis-

parate signals sport entrepreneurs sent to investors. The following research questions guided this work:

RQ₁: What signals do sport entrepreneurs use to communicate with investors?

RQ₂: Do these signals differ by gender, and if so, how?

The analysis also investigated the purpose of the signals sent by sport entrepreneurs. Embedded in the logic is that good signals are sent purposely (Connelly et al., 2011), and that their purpose may be inadvertently influenced by a range of cultural or demographic traits (Brunson et al., 2009). It follows that, through careful contextual analysis, researchers can make judgments about how each signal is being utilized. Therefore, in tandem, the analysis aimed to understand (1) how the common signals sent by both groups were used (i.e., the purpose of the signal), and (2) which signals were unique to one gender (if any), and how those were used. Thus, the third research question is:

RQ₃: What was the intended purpose of the entrepreneurs' signals?

Methodology

Sample

A search was performed using a popular venture capital database (crunchbase.com) for entrepreneurs who had started at least one sport-specific startup between the years 1972 (the earliest year in the database) and 2017 (the most recent year for which reliable data could be gathered). To be included in the sample, the individual must have played a foundational role (Founder, CEO, COO, CTO, etc.) in the startup. Each entrepreneur's name, gender, and self-reported biography was collected.

To confirm the sport-specific nature of their startup(s), the "company description" field had to contain the term "sports." These initial results were examined by the lead researcher to ensure that each entrepreneur was tied to at least one startup that was specific to the sport industry. The final sample contained 630 entrepreneurs—41 females and 589 males.

Procedure

The investigators undertook a mixed-method approach to data analysis. First, a quantitative approach was used to answer the first two research questions using Latent Dirichlet Allocation (LDA). LDA probabilistically categorizes words and phrases into collections that are representative of the underlying topics present in a corpus (Blei et al., 2002).¹ LDA was chosen because it reduces researcher bias when identifying themes but allows for researcher input when assigning topic

¹'ldagibbs' in stata (https://warwick.ac.uk/fac/soc/economics/staff/crschwarz/lda_stata.pdf)

names (Dyer et al., 2017). Also, LDA was chosen because it allowed words to belong to multiple topics based on the specific context of its occurrence, a noted benefit of modern topic modeling procedures (Dyer et al., 2017). The procedure was completed for the collection of entrepreneurs' biographies, and a series of themes was rendered.

Signaling theorists studying entrepreneurship have noted that good signals should be explicit, such as the written or spoken word (Certo et al., 2001). Good signals should also aim to establish credibility (Janney & Folta, 2006), and focus on the most relevant and important information (Zimmerman, 2008). Short, public autobiographies posted by entrepreneurs on the Internet thus constitute opportune chances for signal sending, and similar approaches have been used in prior work (e.g., Piva & Ross-Lamastra, 2017).

Second, using an explanatory sequential approach, the investigation expanded on these initial findings (Creswell & Creswell, 2018). Using the themes derived by the LDA, the researchers employed axial coding to review each biography and examine similarities and differences in how each theme was employed (Babbie, 2008).

In sum, the themes identified by the LDA were interpreted as signals sent to investors, and the axial coding provided further detail about how each theme (i.e., signal) was being utilized (Miles & Huberman, 1994).

Data Quality

To ensure the quality of the data analysis, three procedures were used: purposive sampling, search for alternative explanations, and investigator triangulation (Lincoln & Guba, 1985). Purposive sampling identified entrepreneurs who were founding members of at least one sport startup in their career. Following the LDA, investigators independently searched for alternative explanations, then peer debriefing was used to arrive at strong conclusions. Finally, investigator triangulation was used to cross-check the coding by comparing results among two separate investigators (Johnson, 1997).

Results

Latent Dirichlet Allocation

Table 1 presents the results of the topic-modeling procedure. Topics are separated by gender and ordered from most predominant to least predominant. Table 1 illustrates the six themes and each theme's most strongly indicative words, in order from most-to-least likely to connote that grouping as a topic. Three takeaways form the LDA informed the subsequent axial coding. First, male sport entrepreneurs sent strong signals related to sports, while females did not. This is shown in Table 1, where Sports is the most prominent theme for males, while females did not produce any sport-specific themes at all. Second, both groups employed signals relating to their leadership, albeit to different degrees. Third, both sent signals related to technology/technology investing.

Table 1*Themes and Most Representative Words*

Theme	Most Representative Words
Males	
Sports	league, sports, American, national, basketball
Technology	venture, capital, technology, investor, partner
Leadership	served, executive, president, board, chief
Entertainment tech	media, digital, entertainment, games, mobile
Achievements	entrepreneur, school, work, award, board
Technical Skillset	technology, product, development, management, online
Females	
Women in the media	magazine, women, national, media, cable
Marketing skillset	concierge, strategic, leading, international, marketing
Technology startups	YouTube, startup/s, founding, project
Consumer focus	Google, sales, years, consumer, early
Health/social impact	digital, health, foundation, advisory, efforts
Leadership	board, technology, served, executive, president

Axial Coding

Tables 2–4 present the result of the axial coding. Each of the three takeaways was examined in order to assess how entrepreneurs signaled their competencies to investors. For brevity, the results illustrated in Tables 2–4 are not recapitulated here; rather, they are referred to in order to inform and bolster the study’s managerial implications.

Managerial Implications

Relevant stakeholders should take note that female sport entrepreneurs are much less likely to discuss the theme of “sports” in their biographies. Even when their startups were sport-related, the theme of “sports” was not present for the group of female entrepreneurs. This is salient given the preeminence of “sports” in the males’ biographies. In general, female entrepreneurs are funded less frequently than their male counterparts are, and when they are funded, they receive less in funding (Brush et al., 2002; Eddleston et al., 2016). Prior work has also stressed that when information asymmetries exist in an entrepreneurial context, the venture has a greatly reduced chance of attaining funding (Courtney et al., 2016). Our findings suggest that female sport entrepreneurs run a considerable risk by not communicating more overtly about the sporting elements of their career experi-

Table 2

Representative Statements for the Technology Theme

Theme: Technology	Representative Statement
Males	<p><i>Describe a specific industry/ subsector</i> He currently serves on the boards of SeatGeek and Adaptly, both DreamIt companies, and has advised emerging companies in e-commerce, marketing and advertising technologies including iContact, OrderMotion and Transactis.</p> <p><i>Investor in</i> Jim invests nationwide and focuses on information technology investments, with particular interest in consumer Internet, application software, and Internet enabled market places.</p> <p><i>Associations and Awards</i> He also was named the Southern California Technology Association's CEO of the Year in 2009</p> <p><i>Thought leadership</i> As CEO and co-founder of the entertainment management company Three Six Zero, he utilizes his visionary perspective to skillfully unite music, entertainment, and technology.</p>
Females	<p><i>Optimization</i> Currently she is the VP of Product Strategy at Wonga a ground breaking online lender which uses sophisticated risk and decisioning technology to make automated yet responsible lending decisions</p> <p><i>Women in Technology</i> She speaks globally on women in technology, design, investing, and entrepreneurship</p>
Shared	<p><i>Build legitimacy/describe experience</i> Bartz brings to the Board of Directors leadership experience including service as the chief executive of two public technology companies. These roles have required technology industry expertise combined with operational and global management expertise.</p> <p><i>As a lever for social/community change</i> Inspired by all that technology could do for humanity she double majored in Electrical Engineering and Computer Science at Duke University.</p>
<i>Consumer focus</i>	<p>Carving a niche as an agency that could deliver both excellent design as well as the creative technology to successfully execute transformational experiences, they caught the attention of Steve Jobs and several top-tier companies around the world</p>
<i>Passion/love for: source of inspiration</i>	<p>Chris attended the State University of New York at Buffalo for six years of graduate- level mathematics classes wearing thick glasses, awkward braces, and knowing the entire time that technology and computers would be passions of his for life</p>

Table 3
Representative Statements for the Leadership Theme

Theme: Leadership	Representative Statement
Males	
<i>Informal sources of</i>	While he learned his earliest lessons in leadership and web design from his high school Quake 2 clan and Everquest guild, Alexis continued his official studies at the University of Virginia
<i>As a strategic resource</i>	Throughout his career, LaGuardia has earned a reputation for his leadership, collaboration, and innovation
Females	
<i>Technical Leadership</i>	Prior to VMware Diane held technical leadership positions at Silicon Graphics Inc a provider of technical computing storage and data center solutions Tandem Computers Inc a manufacturer of computer systems and Sybase Inc an enterprise software and services company and was Chief Executive Officer of VXtreme Inc a developer of streaming media solutions
Shared	
<i>Professional Legitimacy</i>	Coles has been widely recognized for her leadership in the world of journalism
<i>Social and Community</i>	Mike was part of the founding team of the African Leadership Academy, a start-up pan African secondary school, dedicated to improving Africa's leadership through educating future native leaders of Africa
<i>Aiding with change management</i>	Under her leadership Nickelodeon became the top rated hour cable service and won several notable honors
<i>Thought Leadership</i>	A recognized authority on the psychology of leadership, negotiations and organizational turnaround, he has served as an advisor to leaders around the world for more than 39 years.

Table 4

Representative Statements for the Sports Theme

Theme: Sports	Representative Statement
Males	
<i>Ownership/Founder/Investor/Manager</i>	<p>Greg is also Founder, Chairman & CEO for Momentum Sports Group, LLC, which owns and operates the UnitedHealthcare Pro Cycling Team, the #1 professional cycling team in the United States for most of the past decade. In 2002, he became vice chairman of Rainbow and helped lead the executive management team directing AMC, IFC, Bravo, WE tv, Fuse, Lifeschool, News 12 Networks, Rainbow Advertising Sales Corporation and Rainbow Sports Networks.</p>
<i>Media and sports</i>	
<i>Personal Sport Journey/Former Athlete</i>	<p>Baron Davis is a two-time NBA All-Star and record-holder. Over a thirteen-year career, he played for the Charlotte Hornets, the Golden State Warriors, the Los Angeles Clippers, the Cleveland Cavaliers, and the New York Knicks. A sampling of his elite clients from the world of sport include: golfers Mark O'Grady, Meata and Justin Rose; tennis players Jim Courier, Monica Seles, and Arantxa Sanchez-Vicario; boxer Ray Mancini; hockey players Eric Lindros and Mike Richter; and Olympic gold medal speed skater Dan Jansen</p>
<i>Athlete Management and Performance Evaluation</i>	<p>Hawkins introduced many strategies and practices to the PC and game industries and was the creative force behind EA Sports.</p>
<i>eSports Industry</i>	
<i>Sporting Goods Industry</i>	<p>Professor Ulrich has led dozens of innovation efforts for medical devices, tools, computer peripherals, food products, web-based services, and sporting goods.</p>

ence and/or current sport startups (Eddlestone et al., 2016). Thus, female sport entrepreneurs can likely enhance their odds of success by tailoring their signals more closely to what sport investors are attuned to. If females are seeking funding for sport startups, demonstrating a link to sport could bolster perceptions of their expertise (Balachandra et al., 2016). These efforts could build implicit confidence in the entrepreneur and her idea/product/company.

The second takeaway illuminated by the LDA were the slight differences between males' and females' use of the "technology" theme. On average, both groups used this theme throughout their signaling efforts. Males used technology to describe their investment activity, list their awards and professional associations, and highlight their thought leadership. Females did this in part; they discussed using technologies to optimize business processes. However, a key difference was that females also discussed technology in the context of describing women's roles in high-tech and the ability of technology to secure alliances and strengthen relationships. The latter use of the technology signal implies that there are networks of formalized exchange taking place among female sport entrepreneurs, and that those networks are enabled by technology. Sport investors may find benefit in seeking out networks of female sport entrepreneurs to learn how they can become stronger allies, which may include helping female sport entrepreneurs develop their personal networks (Brush et al., 2002; Noguera et al., 2013).

The last takeaway concerned the extent to which each gender discussed leadership. Both used leadership themes, but it was more popular in the males' biographies, which is consistent with the interpretation of entrepreneurship as a profession associated with historic representations of male leaders (Eddlestone et al., 2016). Despite differences in prevalence, the ways males and females discussed leadership was more similar than different. Both groups leveraged the leadership theme to bolster their professional legitimacy, discuss their social and communal impacts, articulate change management efforts, and position themselves as thought leaders. Interestingly, females uniquely discussed leadership by describing their technical leadership, which is a competency-building signal to investors typically attributed to males (Carli & Eagly, 2011; Balachandra et al., 2016). It appears that in sport, female entrepreneurs are comfortable signaling their leadership competence with regard to technical endeavors. This represents a reversal of traditional, gendered interpretations of entrepreneurs in which leadership in technical areas of business is attributed to males (Marlow & McAdam, 2012). In other contexts, women who embodied masculine traits like experience leading technical projects or teams garnered prejudicial reactions in the workplace (Rudman & Glick, 1999). Based on Balachandara et al.'s (2016) findings that feminine behaviors produced bias against entrepreneurs (irrespective of gender), perhaps masculine signals like technical leadership can be of service to female sport entrepreneurs. Importantly, the analysis did not investigate the effectiveness of said signals, meaning there is no way to make judgements about whether females' technical leadership signals were successful.

Future Research

Despite the difference in the prevalence of sports themes in the males' and females' biographies documented here, more work is needed. For instance, the sample contained only 41 females compared to 620 males. Future work should examine whether sport-related themes emerge in a larger sample of female-founded sport startups. In addition, future studies should examine how sport investors perceive technical leadership signals from male and female entrepreneurs. Finally, this study was primarily descriptive in nature, as little work has been done in this space. Next steps in this domain should attempt to link signals sent by male and female sport entrepreneurs to various measures of entrepreneurial success.

Conclusion

This study explored how sport entrepreneurs portrayed themselves to investors. The signals sport entrepreneurs send likely affect how they are perceived by investors, thereby effecting funding outcomes. The priority male entrepreneurs gave to 'sport' could act as a credibility-enhancing signal to investors, which was a signal absent from the females' biographies. This could be a strong signal to investors that females should consider when telling their stories. The unique way in which females discuss leadership and technology could serve them in gaining support as it implied creative differences in thought leadership and their approach to networking.

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A Case “Fore” Buffer Zones

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Abstract

Golf tournaments are fun and exciting events because they allow for up-close interaction with players, but they also present a risk management concern. Professional golfers are not immune to hitting errant golf shots and a lack of buffer zones often results in spectator injury. The purpose of this paper is to examine how buffer zones can be enhanced or developed to protect patrons. Utilizing data from the PGA Tour, a model was developed to aid in predicting errant tee shots to enhance buffer zones.

Keywords: *Buffer zone, golf, patrons, risk management*

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Introduction

The 2018 Waste Management Phoenix Open hosted at TPC Scottsdale in Phoenix, Arizona, set tournament and single-day records for the Professional Golfers' Association (PGA) Tour: 719,179 fans attended the event, of which 216,818 attended Saturday's round—displaying increases of nearly 10% and 6%, respectively from 2017 (Berhow, 2018). The increase in excitement focused on professional golf is music to the ears of Tournament Directors, the PGA Tour, and corporate sponsors, but care must be taken to ensure patron safety at professional golf events.

On the opening day of the 2018 Ryder Cup, Brooks Koepka hit an errant tee shot that struck a patron in the head causing the person to lose sight in their eye (Herrington, 2018). This spectator injury aided in illuminating the need for research-based guidance to minimize spectator risk at sporting events. Indeed, after increased publicity of spectator injuries caused by balls and bats entering the stands and injuring spectators, Major League Baseball (MLB) announced that all 30 clubs would increase netting for the 2018 season (Cassavell, 2018). However, MLB was reluctant to develop a formalized policy due to the chance of creating legal jeopardy from the “Baseball Rule.”

According to the “Baseball Rule,” “stadium owners and operators are not responsible for injuries sustained by foul balls or pieces of shattered bats, so long as netted or screened seats are in place for a reasonable number of spectators” (Ransom, 2015, para. 2). The “Baseball Rule” has brought extensive debate with respect to the duty owed to spectators, but little has been discussed for golf tournament patrons who are at a higher risk of getting hurt than the players (Fried & Ammon Jr., 2002; Ludden, 2013). Though Kastenburg (1996) discussed the important role of *Duffy v. Midlothian Country Club* (1980) in determining assumption of risk for injuries sustained by spectators at golf tournaments, the courts have not established precedent on the subject, and a deciding factor in most cases comes down to a spectators knowledge of the game of golf (Kastenburg, 1996).

A golf tournament presents a wide variety of variables that cannot be fully considered on each golf shot, leading to the question “Can you control the uncontrollable?” Spectators must assume some of the risk associated with viewing the tournament, but is getting hit by a golf ball an inherent risk of attending a golf tournament? The PGA Tour (2018) provides the following statement on the back of each ticket:

By entering onto the grounds of the tournament using this ticket, you acknowledge and agree to the following for yourself and on behalf of any accompanying minor (who shall also be deemed to be “you” for purposes of the following): YOU ASSUME ALL RISK AND DANGER ARISING OUT OF YOUR ATTENDANCE INCLUDING LOSS OF YOUR PERSONAL PROPERTY, INJURY, OR DEATH FROM A GOLF SHOT OR BY OTHER SPECTATORS OR PLAYERS, AND YOU HEREBY RELEASE

TOUR, THE HOST ORGANIZATION, THE HOST SITE, TELEVISION BROADCASTERS, SPONSORS, VENDORS AND THEIR RESPECTIVE AFFILIATES, EMPLOYEES AND AGENTS, AND ALL VOLUNTEERS, PARTICIPATING PLAYERS AND CADDIES, FROM ANY AND ALL LIABILITIES ARISING OUT OF SUCH LOSSES, INJURIES OR DEATH (para. 1).

Despite this statement, tournament directors still have the duty to provide a safe environment for spectators. The purpose of this paper is to examine how buffer zones can be applied to golf tournaments to improve patron safety through a data-driven approach.

Buffer Zones in Sport and Recreation

Seidler (2006) defines buffer zones as “a certain amount of space between the activity area and any obstructions... to enhance the safety of the participants” (p. 33). Practitioners have the duty to provide reasonably safe conditions for participants and spectators. Dougherty and Seidler (2007) explain “activity providers bear a legal obligation to take reasonable precautions to prevent harm to participants, spectators, and paid or volunteer staff” (p. 4). Insufficient buffer zones breach that duty and may result in serious injury that could have been prevented.

Sport activities “have inherent risks associated with them that cannot be eliminated without altering the integrity of the activity” state Martin and Seidler (2009, p. 9). Buffer zones are not created to fundamentally change an activity to make it safer, but rather to create a space around the activity area to prevent players and spectators from avoidable injury. Because every sport has its own inherent risks due to elements such as rules, equipment, physical demands, and number of participants, buffer zones are not a one-size-fits all solution used to mitigate participant injury. Some sports have standard recommendations regarding buffer zones, but many governing bodies provide either no or inconsistent suggestions to practitioners (Martin & Seidler, 2009). Professionals who do not understand the risks associated with inadequate buffer zones put their participants at risk and create opportunities for litigation. “In short, one can drastically reduce the likelihood of participant injuries and subsequent lawsuits in many sports and activities simply by providing ample buffer zones” (Dougherty & Seidler, 2007, p. 5).

Research Problem

The Koepka incident is not the only time a patron has been struck with a ball during play; multiple instances were reported on social media outlets from fans at other tournaments throughout the PGA tour schedule. The United States Golf Association (USGA) in 2017 released its distance report noting significant increases in driving distance in all professional golf tours, including significant increases in overall launch conditions (ball speed, swing speed, launch angle, etc.). Strokes Gained is another measurement to consider as it “gives the number of strokes a golfer gains or loses relative to an average PGA Tour tournament field” (Broadie,

2011, p. 27). The infusion of data into golf along with the Strokes Gained metric has led golfers to seek distance over accuracy, especially off the tee (Broadie, 2014). Broadie expressed a desire for golfers to get closer to the green in a quicker manner, because data shows accuracy increases, and scores decrease with shorter clubs in the hands of a player on approach shots. Accordingly, we propose the following research questions:

RQ₁: What is the relationship between Average Carry Distance (ACD) and Distance from Edge of Fairway (EOF)?

RQ₂: How can the relationship between Average Carry Distance and Distance from Edge of Fairway guide the development of buffer zones for golf tournaments?

Method

Consulting the Industry

In order to maintain an applied focus to this study, personal industry connections were leveraged to speak with executive directors of professional golf events. The present study was discussed with a director from a PGA Tour tournament, Korn Ferry Tour tournament, and a Pro-Am Celebrity Golf Tournament. The discussions yielded two key themes. First, spectators are increasingly becoming more distracted at tournaments due to their personal electronic devices, limiting the effectiveness of any risk management strategy. Second, the tournament staff sets up the course (i.e. placing spectator rope lines), but Tour officials have the final say in where ropes are placed. Insight gained from the Tournament Directors will be integrated in a mixed-method approach to developing guidance for golf tournament event managers.

Data Model

Data was collected from the PGA Tour website for the 2017-18 PGA Tour season. The PGA Tour was selected for this study because it is the premier professional golf tour in the world and led the USGA's distance study in multiple measurable categories (USGA, 2017). A player ($N = 193$) was reported in the tour dataset if they recorded 50 or more rounds in PGA Tour tournaments. The PGA Tour records data using their ShotLink system, a combination of laser measurement and radar systems used to measure the distance of a shot and launch conditions (swing speed, launch angle, ball speed, etc.). "Off the Tee" conditions were utilized because in theory accuracy decreases with longer clubs (i.e., driver) than with a wedge, and ball speeds are at their greatest with a driver.

Data on the total amount of errant drives that struck patrons and the frequency of occurrence was sought, but this information either is not tracked by the PGA Tour, or is not publicly available through the ShotLink system. The ShotLink system measures all drives from a golfer during the PGA Tour season. Edge of Fairway (EOF) is defined by the PGA Tour as the average distance in feet and

inches from the edge of the fairway when the player misses the fairway, calculated on tee shots of all par 5 holes and par 4 holes where a player did not go for the green ($N = 61,910$) (PGA Tour, 2019b).

Average Carry Distance (ACD) is defined by the PGA Tour as distance from tee to the point of ground impact on par four and par five tee shots where a valid radar measurement was taken ($N = 9,978$) (PGA Tour, 2019a). The nearly 10,000 measured attempts on tour are less than the 61,910 measured shots for the EOF statistics because not every hole during a tournament has a radar measurement system to measure carry distance. Carry distance cannot be measured accurately using the ShotLink system because it involves estimation from the measurement team in determining where the ball first struck the earth. Driving Distance (total distance) is measured by the PGA Tour on two holes during a tournament that go in the opposite direction to aid in neutralizing the effects of weather elements (i.e. wind) on the golf ball (PGA Tour, 2019c).

Results and Analysis

Model

A regression model was utilized in this study. The variables ACD and EOF for the 2017-2018 PGA Tour season were utilized to best answer the two established research questions for this study. A golf ball has the potential to do the greatest harm to a patron on the initial return to the ground, measured by ACD. EOF was utilized because it is important to understand where the viewing ropes should be established. The independent variable in this study was ACD and EOF was the dependent variable.

ACD and EOF figures from the database were used to build a new dataset for the study. Individual player data for each variable was matched using player names. Due to the original structure of the data from the PGA Tour, the season average for a player was utilized, hoping to minimize the impact of wind and course design on the two variables used in the study. Native formatting for the measurement of the variables, ACD (yards) and EOF (feet). The decision to utilize ACD over other potential variables such as ball speed, smash factor, etc. was done in order to maintain a pragmatic focus for practitioners who can use this study to inform their decision making.

ACD explained 20.8% of the variance in EOF in this study. ACD has a positive relationship with EOF; a 1-yard increase in ACD means EOF increases by 3.062 feet. The first research question that guided this study was answered through the model explaining the variance in EOF through ACD. While 79% of variance in EOF was explained through other variables not included in this study, the model potentially adds value to industry professionals who execute golf tournaments. Table 1 provides the descriptive statistics for the two variables and Table 2 provides the results of the study.

Table 1*ACD and EOF Descriptive Statistics*

	Mean	Standard Deviation	Minimum	Maximum
Average Carry Distance (Yards)	296.61	8.163	278.4	319.8
Edge of Fairway (Feet)	8.859	1.216	6.179	12.025

Table 2*Research Findings*

	B	Standard Error	p – value
Average Carry Distance	0.061	0.007	0.001

Notes. $R^2=.266$ ($p < .0001$)

Golfers want conditions to be calm, enabling them to take advantage of a course and subsequently post low scores. The two primary variables impacting a golfer's performance are the course design and weather conditions. Broadie's (2014) Strokes Gained metric is an attempt to summarize a golf round in a couple metrics, making it easier for a golfer to determine their performance relative to their peers, taking into account as many variables as possible. While this model was only able to predict 20.8% of the variance in EOF by ACD, it is sizable when viewing the multitude of variables at play with any given swing of a club. The average tour pro hits the ball one sixth of a mile with over nine seconds of hangtime off the tee. We believe having the ability to understand close to one fifth of the variability is a powerful tool for tournament event managers.

Post-Hoc Analysis

The results of the model made us curious to explore other possible variables that could be better predictors for EOF. Smash factor, ball speed, and swing speed were explored during the post-hoc analysis. Swing speed is the speed at which the golfer swings their club, with speed being the greatest with a driver due to the length of the club and the ability to get the greatest angular velocity. Ball speed is the speed of the ball immediately after impact with a club. It is greatest on shots where the golfer uses their driver. Smash factor is a relatively new metric that was developed along with advances in radar tracking systems. It assesses the relationship between ball speed and swing speed at the time of impact.

Our post-hoc analysis confirmed our selection of ACD as an exemplar predicting variable. Multi-collinearity issues existed with the other variables each predicting themselves when placed into a model. As a matter of practicality, the use of ACD and EOF are meaningful to industry professionals who are able to objectively see the two variables. The advanced metrics that are being utilized provided by Trackman and other sources for the PGA Tour to enhance broadcast and player development/training are not applicable to from an event managers perspective. The use of ACD as the independent variable was supported by overall model strength when the other variables were used as independent variables to EOF.

Discussion and Implications

Buffer zones are critical to keeping participants safe in competition, but they must keep patrons safe from the competitor’s gameplay (Cotten & Wolohan, 2013; Seidler, 2006). Golf is a traditional and conservative sport and is often reluctant to implement new changes that could possibly hinder the spectator experience at their events. Patrons enjoy the opportunity to interact with the players they idolize, hoping to get a high five or autograph to enhance the overall experience on tournament grounds (Lambrecht et al., 2009). The lack of buffer zone standards presents a possible risk management hazard for the game of golf. In the next sections, the discussion of how to keep spectators safe at tournaments is a combination of golf course design and event management difficulties.

Course Design

One would assume professional golf buffer zone standards would have been developed over time, especially considering the game of golf is over 200 years old (Goodner et al., 2017). Dr. Alister MacKenzie’s 1920 book, *Golf Architecture: Economy in Course Construction and Green-Keeping* is one of the first publications in golf course design. Most of the points made in this work focus on creating the best experience for the player, sprinkled with vague statements such as “there should be a minimum of blindness for the approach shots” that are unclear in context (2015, p. 5). Surprisingly, resources available today are not much different. There are presently no professional standards in golf course design and buffer zone implementation, nor is there a governing body designated to create, implement, and enforce safety standards.

The ASGCA has multiple resources available on its website, such as a publication titled “Building a Practical Golf Facility” by Dr. Michael Hurdzan (2005). This document explores the entire course building process and only mentions trees as “good safety buffers” that provide shade and aesthetic value (p. 9). The resource actually confirms the argument of this paper: “There are no safety standards for design of a golf facility, so each designer must apply prudent criteria, and then be prepared to defend those criteria if necessary” (p. 29) and reiterates there are “no constraints or guidelines on making golf holes” (p. 16). Golf courses are rarely designed with the purpose of providing a great spectator venue for a tournament,

contrary to the way most facilities are constructed in the sport industry; outside of usually one week per year on a select handful of courses there are no spectators watching golfers play (American Society of Golf Course Architects, 2018, 2005). TPC Sawgrass in Ponte Vedra Beach, Florida is one vivid example of a course designed with both the golfer and spectator in mind. An architect will always default to designing a course to challenge the player rather than favor the spectator experience. This creates challenges for event managers to provide the greatest access while keeping spectators safe.

Event Management Guidance

Leveraging the input provided from industry professionals and the results from the model, it's logical to believe the insight can be used to increase spectator safety at golf tournaments. Trees are commonly thought of as a means to keep people safe from errant shots on a course, but this does not always hold true; professional tournament venues regularly remove trees to increase hole length, often allowing patrons to get closer to the fairway than where trees provide safety (Hurdzan, 2005). Little thought has been given to keeping patrons safe at tournaments beyond the customary ticket-back language that often goes unread. In our discussions with PGA Tour Tournament Directors, they said they “do their best to set patron viewing ropes in spaces in accordance with possible clubs hit off tees, prevailing winds, etc.; but the Tour has the ultimate say in where the ropes are placed.” One director passed along the operations manual for the event, which only includes a paragraph discussing the responsibility of the tournament to place ropes and cover that expense.

Roping Standards

The average for EOF in the 2017-18 PGA Tour season was 26.6 feet, with a maximum of 36 feet. Taking these results into consideration, our second research question sought to apply the relationship between average carry distance and EOF as a guide to developing buffer zones for golf tournaments. Using the model produced in this paper, it's suggested the ropes expand from an average of 8 yards along the fairway until 280 yards from the tee, where they expand gradually to 15 yards from the edge of the fairway at 300 yards and then gradually go back to 8 yards from the fairway after 320 yards. The decision for the 280–320 yard range for the expanded rope range is based on the ACD variable figures presented in Table 1.

Driving Distance and Accuracy

A common perception is that as driving distance increases driving accuracy will decrease. Logically, this makes sense due to the wide variety of variables that can impact a golf ball during flight (wind, humidity, collision with a foreign object, etc.). Driving distance is a favorite topic of conversation amongst the USGA, not for driving accuracy but golfers are hitting the ball too far and ruining the integrity of the game.

Professional golfers today are physically fit and focused on their athletic abilities. A cursory review of their social media sites displays a focus on their craft from physical fitness to equipment fitting to enhance their game. Professional golfers are advanced athletes when compared to their predecessors and it shows in the performance on the course in driving distance and other variables. While it may seem logical from personal experience that as driving distance increases, accuracy decreases, professional golfers are proving on a weekly basis that they can consistently, on-demand drive a golf ball over 300 yards and maintain accuracy.

Conclusion

The desire to grant access to spectators while keeping them safe is one of the oldest concerns for event managers. In order to provide more courtside seats for fans, National Basketball Association (NBA) franchises have restructured where team benches are positioned, bringing fans closer to the players and giving the ability to charge more for the access (Tinsley, 2017). MLB and National Hockey League (NHL) have expanded netting to keep spectators safe, changes only made after catastrophic injuries occurred to spectators during games.

Golf tournaments can provide spectators a fun experience, but they pose an elevated risk to patrons that does not traditionally exist at other professional sports. Tournament directors and their staff may take a group of variables into consideration when deciding where they place rope lines for spectator safety, and balancing access to the players with spectator safety is always challenging. It is not practical for a golf course or tournament organizers to construct temporary netting along the fairways in landing zones because it would alter the nature of the game, reducing hazards for the golfer and making the game easier. Implementing our proposed roping guidelines will keep patrons safe without affecting the spectator experience, enabling a tournament to still provide access to fans while ensuring they are safer in the typical landing zone of tee shots.

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An Examination of Travel Effects on Performance Outcomes in Major League Soccer

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Abstract

The home advantage (HA) is a well-documented phenomenon across team sports, including association football (soccer). The effects of travel play a role in the HA, although the nature in which travel affects performance is still unknown. Match data from Major League Soccer (MLS) were used to investigate the role that crowd factors, travel, and team quality play in the HA. The results demonstrated the negative effect of a connecting flight by the visiting team on match outcomes. Also, in comparison to drawn matches, home team wins and losses increased when traveling east.

Keywords: *Home advantage, soccer, football, travel effects, jet lag, crowd effects*

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Introduction

Supporters create a desirable atmosphere for athletes playing games at their home venues compared to playing in an opponent's stadium (Jamieson, 2010). This environment can provide host teams with a home advantage, which is defined as "the consistent finding that home teams in sport competitions win over 50% of games played under a balanced home and away schedule" (Courneya & Carron, 1992, p. 14). The home advantage appears to be universal across all types of sports, although the magnitude varies depending on the sport (Courneya & Carron, 1992). When analyzing the impact of sport type, Jamieson (2010) demonstrated that the home advantage for soccer was stronger than any other sport, with home teams winning 67.4% of matches.

Major League Soccer (MLS) has been operating as the highest level of domestic soccer in the United States soccer pyramid since 1996 (Greysier & Goldman, 1998). Article 11 of the 2015 Collective Bargaining Agreement (CBA) between MLS and the Major League Soccer Players Association (MLSPA) outlines that teams travelling distances greater than 250 miles shall travel by air on regular commercial carriers. In addition, the CBA allows MLS teams to use chartered air transportation for up to four legs of flights per season (Major League Soccer, 2015). Baxter (2016) outlined the contrast of MLS with other North American professional leagues in this regard, who fly exclusively on charter flights. The trips made by MLS teams on commercial air travel range from approximately one to nine hours and are characterized by flight and baggage delays, and uncomfortable middle seats. These disruptions are most likely to impact teams in Vancouver, Seattle, and Houston, who travel more than 40,000 miles by air each season (Baxter, 2016). The length of travel a visiting team endures before a game could disrupt players' routines, resulting in fatigue and poor performance.

Previous research has examined travel and its impact on the home advantage (Smith et al., 2000). However, though important to the successful management of professional sport teams, there has not yet been a study comparing different modes of travel on performance outcomes in sporting competitions (Jamieson, 2010). Thus, the purpose of the present study was to examine how air travel explains match outcomes in MLS.

Literature Review

There are numerous factors that account for sport teams winning a greater percentage of home matches. Carron et al. (2005) advanced a conceptual model of the factors that impacted home advantage, which includes components such as crowd factors, travel factors, and team quality. The model also includes physiological states to consider such as the effects of jet lag (Jehue et al., 1993; Recht et al., 1995).

Crowd factors describe the effect on performance outcomes when the home team is supported by the spectators attending the competition (Courneya & Carron, 1992). Superior performance by the home team evokes as much of a positive

response from a local audience as a superior performance by the visiting team evokes silence and expressions of disappointment (Schwartz & Barsky, 1977). This idea lends well to the assumption that home team players are motivated to behave in ways that evoke social approval. Thus, factors related to the crowd such as density, size, fan behavior, and athletes' perceptions of crowd support all influence the magnitude of the home advantage (Jamieson, 2010). These effects can also be threatening for visiting competitors; having a crowd cheer against their success can be a direct threat to visiting competitors' identities as competent athletes. When an athlete feels threatened, there is an increased tendency to monitor habitual skills to ensure that behaviors are being executed properly, which impairs the execution of those behaviors. The debilitation of visiting competitors' performances, when combined with the facilitation of home competitors' performances, may account for the magnitude of the home advantage (Jamieson, 2010).

Of the factors included in Carron et al.'s (2005) framework, several studies have investigated the effect of travel. Smith et al. (2000) found that travel effects did not account for variation in game outcomes. When examining travel-related fatigue in English professional soccer, Pollard (1986) showed limited support for travel fatigue having an adverse effect on the home advantage. However, it should be noted that travel within England is comparatively brief, with no time zone changes. In contrast, Goumas (2014) demonstrated a relationship between travel effects and the home advantage in Australian soccer, where teams travel across many time zones. As such, a strong positive association between the home advantage and the number of time zones crossed by the visiting team was demonstrated. Specifically, for each time zone crossed by the visiting team, the home advantage increased by approximately 20%. That means when four time zones were crossed, the home team increased its likelihood of winning by roughly 74%. Still, distance travelled did not produce a positive effect on the home advantage after controlling for the number of time zones crossed, indicating that jet lag is the cause of poorer visiting team performance.

In order to explain why visiting performance declined when crossing multiple time zones, Waterhouse et al. (1997) pointed to two main problems caused by jet lag. The first problem is that performance may decline if the timing of the competition does not align with the individual's circadian rhythm. The second problem is that inappropriate training times, increased fatigue, and negative effects on mood will impact physical and mental performance. Directionality was also observed to have an impact on performance (Jehue et al., 1993). Specifically, teams travelling eastward experienced detrimental performances. Similarly, Recht et al. (1995) showed that home teams in baseball scored 1.24 more runs when the visiting team completed eastward travel.

A key problem associated with flights to the east is the difficulty athletes face in getting to sleep at a new bedtime with fewer daylight hours to adjust (Waterhouse et al., 1997). Flights to the west do not experience the same problem as individuals face a premature awakening with the benefit of more daylight hours to adjust to the local time zone. Ultimately, though the sleep difficulties individuals face after

eastward travel can increase the risk of performance decrement (Waterhouse et al.), this may not always be the case. Goumas (2014) presented equivocal findings showing that the direction travelled by the team (i.e., east, west, or neither) was not associated with the home advantage.

If a team is more likely to win a game at home, the magnitude should vary in accordance to the relative quality of the visiting opponents (Schwartz & Barsky, 1977). Bray (1999) hypothesized that low-quality teams may show a greater home advantage than high quality teams since low quality teams win less frequently and, therefore, the home advantage has a greater influence on their ability to win games. In support of this hypothesis, Allen and Jones (2014) demonstrated that teams finishing toward the lower end of the league table showed a greater home advantage than teams finishing toward the higher end of the league table. However, in English professional soccer, Bray et al. (2003) reported that higher quality teams showed a greater home advantage than lower quality teams. Jamieson (2010) concurred with this notion that better teams exhibited a larger home advantage. Regardless of the directionality, the magnitude of the home advantage appears to be dictated by the quality of the participating teams.

The abovementioned studies provide evidence that crowd factors, travel factors, and team quality impact the performance outcomes of visiting teams. The current study builds upon this literature to investigate home advantage using match data from MLS. Specifically, this study quantifies how travel factors explain performance outcomes in MLS, while controlling for crowd factors and team quality. Further, the MLS data examined in this study provide a rich context for investigating travel effects as some teams may travel nearly 3,000 miles and across three time zones for a single game. Based on the above literature, the following hypotheses are advanced:

H₁: There will be a negative relationship between the number of days between the travel day and the match day and the match outcomes of visiting teams.

H₂: There will be a negative relationship between the number of hours travelled before a match and the match outcomes of visiting teams.

H₃: There will be a negative relationship between the number of time zones crossed and the match outcomes of visiting teams.

H₄: There will be a positive relationship between travelling by chartered flight and the match outcomes of visiting teams.

H₅: There will be a negative relationship between incurring a connection while travelling and the match outcomes of visiting teams.

H₆: There will be a negative relationship between completing eastward travel and the match outcomes of visiting teams.

Method

Archival match data were collected from <https://www.mlssoccer.com/results> for the 2015 through 2017 seasons, which coincides with the travel itineraries that were provided to the researchers by representatives of the MLS head office. MLS was comprised of 20 teams during the 2015 and 2016 seasons, but expanded to 22 teams in 2017, with the addition of New York City FC and Orlando City FC. Each team played 34 regular-season games, half of which were at home. This yielded a sample of 1054 games. Travel information for each game was obtained from travel itineraries created by MLS. Only data pertaining to airline travel were included in the data analyses. For each match, team names and final scores were recorded to interpret the outcome variable (visiting team win, loss, or tie), along with data for the following control and predictor variables.

Crowd size data were included to help isolate the effects of travel in the current study. Specifically, crowd density (*Density*) for each match was calculated by dividing the crowd size for each match by the maximum crowd size at the stadium during that season. Stadium capacity information was obtained from mlssoccer.com (2018). For matches played in non-MLS stadia, seating capacity information was obtained from each stadium's website.

Data were also collected regarding the differential in quality between the visiting and home teams for each game at the time the game was played (*Quality*). A Pythagorean formula developed by Hamilton (2011) was employed to calculate the quality of the home and visiting teams for each match. The Pythagorean formula (1) was first developed by Bill James (1988) to predict the win percentage of a baseball team from the observed number of runs scored (*RS*) and runs allowed (*RA*) during the season. The formula (2) developed by Hamilton (2011) was adapted for soccer to account for the probability of a draw, which occurs in a non-trivial proportion of soccer matches. This modified formula estimates points won per game based on the number of goals for (*GF*) and goals against (*GA*), which accommodates leagues, such as MLS, that award points for wins and draws (currently defined as three points per win and one point per draw). The application of Hamilton's formula to results of domestic soccer leagues in Europe, Asia, and the Americas demonstrates congruity between goal statistics and league records for most teams.

$$\frac{\hat{W}}{M} = \frac{RS_{obs}^{\gamma}}{RS_{obs}^{\gamma} + RA_{obs}^{\gamma}} \quad (1)$$

Based on the results of Hamilton's (2011) research, the "universal" Pythagorean exponent (γ) was set to 1.7 when applied to various domestic soccer leagues around the world, including MLS. The validation of the modified Pythagorean formula in MLS justifies its use in the current study to measure team quality. Upon calculating the points won per game for both the visiting and home teams using Hamilton's formula, the difference was calculated to obtain the quality differential. If the quality differential was positive, the visiting team had a higher estimated

point total (and thus, a stronger team) than the home team, and if the differential was negative, the home team had a higher estimated point total than the away team.

$$Pt\% = \frac{GF^Y}{GF^Y + GA^Y} \quad (2)$$

To specify the travel effects on the performance outcomes of MLS teams, the following data were collected from their travel itineraries: the number of days between the travel day and match day (*Days*), the number of hours travelled (*Hours*), and the number of time zones crossed by the visiting team before a match (*Time Zones*). Unfortunately, the number of hours travelled for charter flights was not available in the itineraries provided. To compensate, the website <https://flight-time-calculator.com/> was used to measure the duration of charter flights. This tool calculates the distance between two points on earth based on the 'haversine formula,' as the earth is an ellipsoid rather than a sphere. The calculated charter flight times are estimates because it is not possible to know all circumstances or the actual flight routes taken by teams. Departure and arrival airports are matched to a world-wide time zone map on <https://flighttime-calculator.com.>¹

In addition to the variables explained above, the following data were coded from the travel itineraries in the form of dummy variables: whether the visiting team travelled by charter (*Charter*), whether a team incurred a connection while travelling commercially (*Connection*), and the direction of travel by the visiting team before a match. Specifically, the directionality of team travel was coded as eastward (*East*) or westward (*West*). Eastward travel was represented by the dummy variables of one (1) to represent eastward and zero (0) to represent westward, southward, or northward travel. Westward travel was represented by the dummy variables of one (1) to represent westward and zero (0) to represent eastward, northward, or southward travel. Northward and southward travel were not coded separately because teams travelling in these directions do not typically travel across time zones, and when they do cross a time zone, it was captured in the *East* or *West* dummy variables. When coding for the direction of team travel, we calculated the difference in the degrees of latitude and/or longitude from the point of origin to the destination. The direction with the greatest degree of difference was coded as the primary travel direction.

Data Analyses

A univariate chi-square test was employed to determine whether a home advantage existed in MLS during the timeframe of the study. An ordinal (multinomial) regression model was then carried out to determine the amount of explained variance in the outcome variable (visiting team's win/loss/draw) attributable to the main effects of the predictor variables (i.e., *Days*, *Hours*, *Time Zones*, *Charter*, *Con-*

¹While the map used on this website does not account for daylight-savings, a review of the game data revealed only one instance where a team travelled from a location where daylight savings is not observed and was accounted for in the calculation.

nection, East and West). To help isolate the effects of the abovementioned travel factors, *Density* and *Quality* were used as control variables in the regression model. Thereafter, odds ratio calculations were performed to determine the likelihood of game outcomes being dependent on the predictor variables.

Results

Of the 1,054 MLS games that were played in MLS during the 2015 through 2017 seasons, only 978 were included in the analysis. In total, 68 games were excluded because the visiting team did not employ airline travel. Specifically, 58 games were excluded because the visiting team travelled to the game by bus and 10 games by train. None of these instances necessitated travel across time zones. A further 8 games were excluded because no definitive travel information could be established. These 978 MLS games represent 93% of all games played over the three seasons included in the analysis (see Table 1).

Table 1

Visiting Team Travel Mode Summary by Season (2015-2017)

Travel Mode	Season			Total	Percent
	2015	2016	2017		
Commercial Direct	283	282	325	890	84.4
Commercial Connection	18	22	10	50	4.7
Charter	15	11	12	38	3.6
Bus	20	16	22	58	5.5
Train	3	4	3	10	0.9
Missing	1	5	2	8	0.8

The univariate chi-square analysis revealed a home advantage in MLS, $\chi^2 (df = 1, n = 978) = 175.07, p < .001$, with the home team winning 53.1% of the games (see Table 2). This home advantage for MLS is comparable to the home winning percentages for other team sports, as reported by Jamieson (2010). However, if drawn matches are excluded from the analysis, the home team winning percentage increases from 53.1% to 71.7%, which is slightly higher than reported for soccer in reviews by Courneya and Carron (1992) and Jamieson (2010).

Table 2

Home Winning Percentage in Major League Soccer

Result	Frequency	Percent
Win	519	53.1*
Tie	254	26.0
Loss	205	21.0

* $p < .001$

Multinomial Logistic Regression Analysis

Two control variables (i.e., *Density* and *Quality*) and seven predictors (i.e., *Days*, *Hours*, *Time Zones*, *Charter*, *Connection*, *East*, and *West*) were used in a multinomial logistic regression to examine the effect of travel on match outcome (i.e., *win*, *draw*, or *loss*). This analysis revealed a positive effect of a *Connection* during a commercial flight on the likelihood of the visiting team losing its match when compared to a drawn match ($p = 0.023$). A positive effect was also revealed when the visiting team was travelling *East* on the likelihood of both losing ($p = 0.070$) and winning its match when compared to a drawn match ($p = 0.061$) (see Table 3).

Table 3

Summary of Multinomial Logistic Regression Results

Away Result ^a	Predictor	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>Exp(B)</i>	95% <i>CI</i> for <i>Exp(B)</i>
<i>Loss Intercept</i>		.912	.415	4.839	.028		
	Density	-.175	.351	.250	.617	.839	.422-1.670
	Quality	.488	.359	1.852	.174	1.629	.807-3.291
	Days	-.003	.186	.000	.987	.997	.692-1.436
	Hours	-.131	.124	1.105	.293	.877	.687-1.120
	Time zones	.037	.196	.035	.851	1.038	.706-1.524
	Commercial Charter	.163	.410	.159	.690	1.178	.527-2.629
	Commercial Connection	1.185	.520	5.191	.023	3.272	1.180-9.071
	East	.489	.270	3.277	.070	1.631	.960-2.769
	West	.291	.251	1.345	.246	1.338	.818-2.190
<i>Win Intercept</i>		-.074	.507	.021	.884		
	Density	-.109	.424	.066	.798	.897	.391-2.059
	Quality	.169	.438	.149	.699	1.184	.502-2.793
	Days	-.048	.230	.044	.834	.953	.607-1.495
	Hours	-.097	.152	.409	.523	.907	.673-1.223
	Time zones	.022	.239	.008	.927	1.022	.639-1.635
	Commercial Charter	-.209	.543	.148	.700	.811	.280-2.351
	Commercial Connection	.902	.612	2.176	.140	2.465	.743-8.176
	East	.611	.326	3.503	.061	1.842	.972-3.491
	West	.172	.310	.306	.580	1.187	.646-2.182

Notes. Nagelkerke Pseudo $R^2 = 0.021$; *SE* = Standard Error. 95% *CI* = 95% Confidence Interval. ^a Tie is the reference category.

Cross-tabulations and Odds Ratios

To determine the relationship between travel factors and match outcomes, cross-tabulations between *Connection* and *East* on match outcome for the visiting team were performed. Odds ratio calculations were derived from these cross-tabulations. As a soccer match can have three possible outcomes (i.e., win, draw, or loss), odds ratios for each variable were divided into three separate calculations comparing the outcomes of a win to a loss, a draw to a loss, and a draw to a win.

When the visiting team incurred a connection during its travel, the odds ratio comparing a loss to a win was 1.16:1, meaning it was more likely to lose than win. The odds ratio comparing a loss to a draw where a connection was involved in the flight was 2.32:1, meaning that the visiting team was 2.32 times more likely to lose than draw. Finally, the odds ratio comparing a draw to a win where a connection was involved in the flight was 1:2, meaning that the visiting team was twice as likely to win as draw (see Table 4).

Table 4

Visiting Team Result x Connection Cross-Tabulation

Result	Connection	Direct/Charter	Odds Ratio
Win	11	194	Tie: 2:1 Loss: 1:1.16
Tie	7	247	Win: 1:2 Loss: 1:2.32
Loss	32	487	Tie: 2.32:1 Win: 1.16:1

The odds ratio comparing a win to a loss when the visiting team traveled east was 1.83:1, meaning that the visiting team was 1.83 times more likely to win than lose. The odds ratio comparing a loss to a draw when the visiting team is traveling east was 1.42:1, meaning that the visiting team was 1.42 times more likely to lose than draw. Finally, the odds ratio comparing a draw to a win when the visiting team was traveling east was 1.69:1, meaning that the visiting team was 1.69 times more likely to win than draw (see Table 5).

Table 5

Visiting Team Result x East Cross-Tabulation

Result	East	N/S/W	Odds Ratio
Win	82	123	Tie: 1.69:1 Loss: 1.83:1
Tie	72	182	Win: 1:1.69 Loss: 1:1.42
Loss	187	332	Tie: 1.42:1 Win: 1:1.83

Discussion

The current study examined the effect of travel factors on visiting team performance in MLS. Select travel factors appear to affect the performance of visiting teams based on the analysis of three seasons of MLS data. A clear home advantage is reflected in the results, as evidenced from the univariate chi-square analysis, which is supported by the descriptive data presented in Table 2. The results also revealed a negative effect of a connecting flight by the visiting team on match outcomes, supporting hypothesis H_5 . Specifically, the odds ratios revealed an increase in the likelihood of a loss when compared to a drawn match. It is common for soccer teams to adjust their tactics when playing matches on the road. For instance, Tucker et al. (2005) examined the influence of game location on performance from technical and tactical perspectives. These authors found that the home environment and social support from the crowd was associated with an increased aggressive response by the home team, which was manifested by an offensive playing style. In response, coaches of visiting teams often adopted a defensive style to counteract the impact of the home crowd. Consequently, visiting teams exerted more pressure within their defensive third of the pitch to force turnovers and initiate counterattacks. In addition, visiting teams performed more goal kicks and clearances than when they played at home (Tucker et al., 2005).

Travel effects such as jet lag also appear to influence match outcomes of visiting teams in MLS. Notably, their chances of winning or losing matches increased when traveling east when compared to a drawn match. These results support H_6 and are partially consistent with previous findings that the home team could expect to perform better than usual when the visiting team completed eastward travel (Jehue et al., 1993; Recht et al., 1995). In contrast, Goumas (2014) found that directionality was not shown to be associated with the home advantage. However, Goumas did provide support for jet lag being a cause of poor visiting team performance when travelling long distances. These equivocal findings could be due to differences in how researchers operationalize and capture the various travel factors.

The number of days between travel and the match, the number of hours traveled, the number of time zones crossed when travelling, and travelling by chartered flights were not critical predictors of match outcomes in this study. Therefore, H_1 , H_2 , H_3 , and H_4 were not supported by the results. The impact of the number of hours travelled on match outcomes was in line with Goumas (2014), who found no positive effect of distance travelled on the home advantage. Still, Goumas operationalized distance travelled using the latitude/longitude coordinates of each team's home venue, rather than travel duration in hours. The results from Goumas and the current study point to an overall lack of support for either distance or hours travelled as influential factors of match outcomes. In relation to crossing time zones before a match, the findings of the current study contradict Goumas, who reported a positive relationship between the home advantage in Australian soccer and the number of time zones crossed by the visiting team. The poor pre-

dictive ability of these travel related variables may be due to the variance attributable to travel connections, eastward travel directionality, or numerous other factors, including the critical psychological or behavior states of the competitors, coaches, and/or officials cancelling out their effect.

Managerial Implications

There are several practical applications that can be drawn from the results of the current study. Primarily, the findings demonstrate the importance of reducing the amount of jet lag that is experienced by MLS teams and alleviate these symptoms. It is apparent that much could be gained from travel management programs designed to mitigate the effects of air travel on performance (Goumas, 2014). Pre-flight adaptations such as altering the volume and intensity of training sessions, adjusting the timing of training sessions to the destination time zone, and ensuring that athletes have sufficient sleep prior to travelling are suggested methods of lessening the effects of jet lag. Reducing the cost associated with jet lag for eastward travel may be achieved by adjusting the sleep-wake cycle to the destination time zone by advancing the sleep time with bright light upon rising for three days before the flight (Burgess et al., 2003). Flights can also be arranged so that visiting teams arrive well in advance of their matches in order to acclimate. Sleeping on flights should also be avoided unless it is night by destination time (Waterhouse et al., 1997). The harmful effects of jet lag also depend on the duration of the stay. If the stay is less than three days, it is recommended that players stay on their home time and attempt to arrange sleep and engagements to coincide. Pharmacological interventions, such as melatonin, have also been used to prevent and treat jet lag (Waterhouse et al., 1997).

These findings are of particular importance for MLS teams located on the west coast, such as the Vancouver Whitecaps, because they play more away games after eastward travel than other teams. While the performance decrements described in this study may seem small in isolation, their consequences for MLS may be substantial. Over the course of a given MLS season, the difference between a chartered flight and a commercial flight with a connection could mean the difference between making the playoffs or not. For instance, the Vancouver Canucks of the National Hockey League are the lone team in the Pacific Northwest geographical region and often find themselves travelling across multiple time zones for matches against their opponents. Like the Vancouver Whitecaps, the demands of the Canucks travel schedule led former General Manager Mike Gillis to contract a sleep consulting firm to help the team overcome the rigors of fatigue related to travel and time zone changes (Rosen, 2011). This firm monitored the sleeping habits of players and provided data to the Canucks' medical staff to determine the ideal times for the team to fly and practice. This travel management program contributed to the Canucks having the best road record in the league during the 2011 season, in which they reached the Stanley Cup Finals (Rosen, 2011). This example provides evidence for the benefit of fatigue monitoring and travel management systems by professional sport teams located along the west coast.

Although the findings of the present study provide limited support for the implementation of chartered flights in place of commercial travel, there is support for the use of chartered flights when no direct commercial alternative is available. The practical utility of these findings came into focus during the recent negotiations of the new CBA between MLS and the MLSPA. This five-year agreement, reached prior to the 2020 season, includes a substantial increase in the number of charter flights for MLS clubs. Specifically, clubs are *required* to use charter flights for eight legs of travel during the 2020 regular season, where it will expand to 16 legs for the 2024 season. In the previous CBA, clubs had the *option* to charter up to four legs per season. In addition, clubs will be required to use charter air travel for all MLS Cup Playoff matches and (CONCACAF) Champions League games involving international travel (mlssoccer.com, 2020). This new agreement highlights that, although the results of this study are mixed, the practical implications remain noteworthy.

There are several limitations to consider in the present study. The first limitation is the relatively small number of chartered flights and commercial flights with connections compared to the number of direct commercial flights. Of the 978 travel itineraries, 50 (4.7%) of the commercial flights included a connection and 38 (3.6%) trips were made by chartered air travel. A second limitation is the difficulty in controlling for other factors that influence soccer match outcomes. Failing to control for other factors, such as referee bias, coaching turnover, changes in elevation, and critical psychological states may have provided further specificity on the impact of the travel factors of interest. A third limitation can be attributed to accurate flight time information not being available for chartered flights in the itineraries provided by MLS. This is because teams traveling by chartered flights are responsible for arranging the flights themselves and are not required to disclose their flight details to the league. The last limitation pertains to the generalizability of the findings beyond MLS. Teams in other North American professional sport leagues face similar travel demands. However, it is inappropriate to compare these findings with these other leagues because they play much more frequently. Although these findings may be applicable to National Football League (NFL) teams, given the games occur with the same approximate frequency, there are many other rule factors that could differentially influence match outcomes for NFL teams.

Conclusion

The purpose of the current study was to examine the effects of travel on match outcomes for the visiting team in MLS from 2015 through 2017. The study revealed negative effects for incurring a connection and completing eastward travel on the match outcomes for visiting teams. Specifically, the results show that a connection during a commercial flight and eastward travel affects the subsequent performance of visiting teams. The current study provides insight into how different modes of air travel can influence performance and clarifies some of the conditions

under which visiting teams should change or adapt their strategies to achieve favorable match outcomes.

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The Use of Season Ticket Incentives in Major League Baseball

Kaitlin Poe
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Abstract

A study of Major League Baseball season ticket promotional incentives found that the most popular types of incentives provided to season seat holders (SSHs) were exclusive offers, complementary items, discounts, ticket options and services, and payment plans. Offering a payment plan to SSHs was positively associated with higher average game attendance. Payment plans were more commonly associated with teams with higher winning percentages over the past three seasons and with teams that filled a higher percentage of their stadium capacity. Teams that fill more of their stadium capacity were also found to offer fewer categories of season ticket incentives to SSHs.

Keywords: *Season tickets, promotional incentives, Major League Baseball, MLB, sports promotion*

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Introduction

One of the major sources of revenue for Major League Baseball (MLB) teams is ticket revenue. Ticket revenue can be subdivided into four categories: season ticket revenue (full to partial packages,) group ticket revenue (blocks of tickets for an individual game that are sold to an organization), suite and club seating revenue (exclusive seating where revenues are retained by the team), and individual game ticket revenue. Previous research has identified that winning is a significant influence on total attendance (Davis, 2009; Langhorst, 2014), though the effect of winning is different for different types of tickets. Individual game tickets are largely influenced by team performance during the current season; however, since season tickets are sold prior to the start of the season, they are influenced by the anticipation of team performance for the upcoming season (Drea et al., 2016).

For many teams, season ticket sales are the starting point for total ticket sales for a given season. There is an emphasis among most MLB teams to not only maximize full-season ticket sales, but to also get season seat holders (SSHs) to commit to renew or upgrade their season tickets as early in the off-season as possible. This enables a team to determine what its inventory of remaining tickets will be available for group and individual game sales. There is also an emphasis to focus on new SSHs acquisition and on retaining/upgrading SSHs from lower priced packages to higher priced packages in future years. A study of season ticket sales for the Pittsburgh Pirates (Mullin et al., 1993) reported that 80% of the increase in season ticket sales came from 20% of existing Pirate SSH renewing and upgrading/increasing their purchases. It is not an overstatement to suggest that season tickets are the backbone of MLB ticket sales operations.

The purpose of the current study is to examine the use of incentives for the sale and renewal of MLB season tickets—how incentives are used, the categories of incentives is use, and any evidence of their effectiveness.

Background

Season ticket sales staff typically have three primary goals¹: to increase the number of renewals, to increase the revenue stream from existing SSHs (upgraded packages or increase the number of tickets), and to expand the SSH base. It is also important to recognize that direct ticket revenue is only one part of the revenue stream tied to ticket sales. Other sources of revenue that are derived from tickets sold include concessions, parking, and auxiliary services (off-premises team properties that generate revenue from fans). Since these derived revenues are a significant addition to ticket revenue and SSHs are high volume ticket consumers, the lifetime value of SSHs is of importance to MLB ticket sales managers (Drea et al., 2017).

Overall, four factors have been identified that influence the decision to renew season tickets: administration and tangible services, team performance, social

¹Based on private conversations with MLB and college season ticket sales directors.

and related concerns, and love for sports (Chen et al., 2009). SSH satisfaction was found to be most closely correlated with the variable management of the event and facility (Chen et. al., 2009), and the two best predictors of renewal were the variables administration and tangible services and team performance.

There appears to be a difference of opinion between fans and sports marketing directors regarding which promotions are most effective at influencing attendance. Dick and Turner (2007) examined how National Basketball Association (NBA) marketing directors and NBA SSHs perceive the effectiveness of various activities (including promotional incentives for encouraging NBA season ticket renewals. Starting with a listing of twenty different promotional incentives that are used by NBA teams, promotional giveaways at the door was ranked by SSHs as the most effective promotional technique; however, this technique was ranked as #13 of 20 by the marketing directors. Partial season ticket packages were ranked #1 by NBA marketing directors, but only ranked as #5 by SSHs. The idea of a disconnect between fans and sports marketing directors over which promotions are most effective was also found by Lanzillo (2010) in a study of the effects of promotion on minor league baseball (MiLB) attendance. While the research was not limited to season tickets, minor league baseball fans indicated the most effective promotions were hat/cap giveaways (4.15 out of 5), t-shirt giveaways (4.05), and ticket discounts (3.93). MiLB team officials indicated the most effective promotions were fireworks (4.64), in-game entertainment (3.62), and ticket discounts (3.57). Fans seem to be more focused on tangible promotions, while marketing staff seem to be focused on activities that add to the entertainment value.

One of the effective uses of promotional incentives is in response to a service failure. Burton and Howard (2000) reported on effective strategies used by the Portland Trailblazers of the NBA to recover SSHs after a protracted work stoppage. These strategies included the use of gifts as a “tangible atonement for the service breakdown,” offering SSHs free attendance to a team scrimmage, and the use of all staff, the head coach, to personally calling SSHs to urge renewals. In the year following the work stoppage in which some had predicted a 20% decline in attendance, the Trailblazers sold 97.4% of their ticket inventory, in comparison to a league-wide average of 88%. Ticket exchange options have also been suggested as a way of increasing satisfaction for SSHs (Scheff, 1999), though this research was conducted for performing arts SSHs.

Female fans are an understudied area in season ticket research, yet the research that does exist suggests they may be accessible through a different promotional mix. Women are more likely than men to view attendance at sporting events as a means to spending more time with family (Davis et al., 2010). Other researchers have noted significant differences in how men and women respond to promotional incentives in sports. Hansen and Gauthier (1993) found that women purchased a greater quantity of team merchandise in comparison to men. Other research has found that in comparison to men, women are more likely to remain team loyal under adverse conditions (Fink et al., 2002). Given that women cur-

rently constitute only 30% of all “fans” of MLB (Sorilbran, 2019), developing a specific promotional mix towards this target audience is worth further study.

There has been little research into the effectiveness of the use of incentives to encourage MLB season ticket sales. One of the challenges to doing research on MLB season ticket sales and attendance is that MLB teams do not publicly share specific season ticket sales data, and the percentage of total ticket sales that are season tickets is believed to vary widely depending on the franchise. This makes it impossible to conduct a direct examination of the effects of the MLB-wide effects of specific season ticket incentives on different season ticket packages. Individual teams can conduct this research by using their own attendance and incentive data, combined with other independent variables that potentially influence attendance, such as winning percentage, day of the week, and weather (Drea, 1991); however, the lack of publicly available season ticket data from all teams makes it impossible for sports market researchers to draw MLB league-wide conclusions on the effects of season ticket incentives.

A second consideration is that many season tickets are purchased by ticket brokers and then resold to either institutional buyers such as hotels or resold in the secondary ticket market (i.e., StubHub). This means that these individuals who are sitting in season tickets seats are not the same individuals each game. The primary motive of a ticket broker in purchasing season tickets is profit, while the primary motive of an individual buying season tickets is usually related to the direct use of the seats and the entertainment value of the seats. As a result, the incentives provided by the team to the season ticket buyer do not extend to the individual who purchased the ticket on the secondary market. Since ticket brokers are motivated by profit, incentives that cannot be converted into revenue (throwing out a first pitch, MLB-TV app, etc.) are less likely to be effective.

Methodology

A review of the websites of all 30 MLB teams was conducted between January-March 2019. Data collected from each web site included the incentives provided by each team to season seat holders for three categories of season ticket packages: full season (81 games), half season (40-41 games), and 20-game packages. For the 20-game packages, no distinctions were made among the variety of 20-game packages available (e.g., 20 games chosen by the SSH, 20 games vs. division rivals, 20 games chosen by the team). Once SSH incentives were collected, six categories were created in advance: discounts, complimentary items, exclusive items for SSHs, ticket services and options, a SSH club/lounge, and miscellaneous. Incentives were placed into one of these six categories which are in Table 1.

Table 1

Categories and Examples of MLB Season Ticket Incentives

Incentive Category	Examples	# of MLB teams with 1+ of these incentives
Discounts	% off team merchandise % off game concessions Single-game ticket discounts Group tickets at a special rate Party suite discounts	27 teams
Complementary Items	Payment plans Scoreboard messages Spring training tickets On-field batting practice views SSH gifts	28 teams
Exclusives Items for SSHs	Ticket priority for postseason games Run the bases Pregame, on-field recognition Private SSH events Player autograph sessions	29 teams
Ticket Options	Unused ticket exchange Same seats for all games Online ticket management tools Ability to resell tickets SSH-only theme night presales	25 teams
SSH Lounges/Clubs	Club membership for SSH 10% off food and beverages in lounge/club	9 teams
Miscellaneous	Special Event/Concert Presale “Hit for your seat” SSH ID card Collectible pin	7 teams

Additional 2018 data was collected for each team on average game attendance, fan cost index (average cost for a family of four to see a game), win/loss percentage, market size, stadium age, and average stadium capacity filled. Market size was assessed in three ways: Metropolitan Statistical Area (MSA) population, Nielsen TV market size, and a subjective measure of market size (Bleacher Report) based on team operating behavior. In addition, we examined some specific incentives provided to SSH by some MLB teams: a SSH gift/promotion package; a SSH event/appreciation; a media guide, yearbook, and/or newsletter; a parking incentive (a free pass, discount or reserved area); and a free MLB-TV subscription. A summary of all variables examined can be found in Table 2.

Table 2*Variables and Scaling*

Incentive Category	Examples	# of MLB teams with 1+ of these incentives
Discounts	% off team merchandise % off game concessions Single-game ticket discounts Group tickets at a special rate Party suite discounts	27 teams
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Results

A series of independent sample *t*-tests were conducted to examine the variable average game attendance when each SSH incentive was provided, in comparison to when each incentive was not provided. Independent *t*-test results are provided in Table 3. Only one incentive, payment plans for SSHs, was found to be statistically significant ($t = 3.127$, $p = .01$) and in the expected direction (providing the incentive is associated with increased attendance. Average game attendance for the twenty-four MLB teams that offer SSHs a payment plan was 30,773, compared to 21,042 for the six MLB teams that do not provide this incentive.

Table 3

Independent Sample T-Tests, Comparing Attendance When Different Types of SSH Incentives Are Made Available

Variable	Attendance Mean if Offered	Attendance Mean if NOT Offered	T-value (sig.)
Payment Plans	30,773.67 (n=24)	21,042.17 (n=6)	3.127 (.010)
Discounts	28,467.67 (n=27)	32,064.67 (n=3)	0.577 (.615)
Complimentary	27,820.93 (n=28)	42,917.50 (n=2)	3.417 (.132)
Exclusives	28,731.07 (n=29)	31,620 (n=1)	0.310 (.759)
Ticket Options	29,298.12 (n=25)	26,743.60 (n=5)	0.552 (.604)
SSH Lounge/Club	26,512.78 (n=9)	29,819.33 (n=21)	0.949 (.357)
Miscellaneous	25,597.37 (n=8)	30,001.91 (n=22)	1.341 (.199)
SSH Appreciations	26,724.00 (n=7)	29,467.52 (n=23)	0.755 (.466)
Trips/Extra Incentives	30,118.00 (n=2)	28,735.18 (n=28)	0.235 (.848)
Misc. Gift/Promo Pack	30,490.25 (n=12)	27,718.78 (n=18)	0.806 (.429)
Events/Appreciations	25,734.50 (n=6)	29,600.58 (n=24)	1.336 (.202)
Media Guide, Yearbook, or Newsletter	32,539.50 (n=6)	27,899.33 (n=24)	1.078 (.315)
Parking Benefits (Pass, Discount, or Reserved)	25,652.72 (n=18)	33,589.33 (n=12)	2.548 (.018)
MLB-TV App	25,109.63 (n=8)	30,179.27 (n=22)	1.597 (.129)

MLB teams that provide payment plans are significantly more likely to be teams that have filled a higher percentage of stadium capacity. Teams that offer a payment plan for SSHs filled 70.96% of stadium capacity, compared to 51.27% for teams that do not offer a payment plan ($t = -2.541, p = .017$). Additionally, MLB teams that consistently win are also more likely to offer a payment plan to SSHs, in comparison to teams that do not offer a payment plan. Teams with a payment plan had a .513 winning percentage, compared to .455 for teams that do not ($t = -2.331, p = .027$). On the surface, this would initially suggest that MLB teams that win more and have higher attendance would likely have higher ticket prices, and a higher ticket prices would trigger the need for a payment plan for SSHs. While the fan cost index (FCI) (Statista, 2019) for teams with a payment plan was found to be higher than the FCI for teams without a payment plan (\$237 FCI vs. \$208 FCI), but the difference was not statistically significant ($t = -1.325, p = .196$). It is noteworthy that the FCI is likely to change from year to year for all teams in a relatively similar pattern, making the gap (\$29) between teams with and without a payment plan relatively constant from year to year.

One other variable, parking benefits, was also found to be significant; however, the means for MLB teams that provide parking benefits were lower than those who do not provide this benefit. There were several other variables where the mean attendance was actually lower when incentives were provided, including SSH events/appreciations, discounts, complimentary items, etc. The likely explanation for these findings is that teams that already have lower attendance are seeking to increase season ticket sales by offering a greater number of incentives to potential SSHs. The top four teams for percentage of stadium capacity filled (Boston, Chicago Cubs, San Francisco, and St. Louis all filled >92% of their stadium

capacities) only offer an average of incentives in 3.75 categories. By comparison, the remaining 26 MLB teams offer incentives in 4.27 categories.

One of the surprising findings is that most MLB teams do not significantly increase the number of incentives in a season ticket package as the number of games in the season ticket package increases. For example, Table 4 compares the incentives offered by the Los Angeles Dodgers, Detroit Tigers, and Cincinnati Reds for full, half, and twenty game season ticket packages. The value of the incentives provided remains relatively constant, even though the value of the season package for a given seat location substantially increases.

Table 4

Quantities of Incentives Offered to Season Seat Holders for 20, Half, and Full Season Packages for Three MLB Teams: LA Dodgers, Detroit Tigers, and Cincinnati Reds

	Los Angeles Dodgers	Detroit Tigers	Cincinnati Reds
20 game package	Discounts (2 incentives) Exclusives (3) Ticket options (2) Payment plans (2)	Discounts (7 incentives) Complimentary (3) Exclusives (6) Ticket options (3) Lounge/Club (1) Appreciations (3) Miscellaneous (1)	Complimentary (3 incentives) Exclusives (6) Ticket options (1)
TOTAL	9 SSH incentives	24 SSH incentives	10 SSH incentives
Half season package (40-41 games)	Discounts (1) Exclusives (3) Ticket options (2) Payment plans (2)	Discounts (7) Complimentary (3) Exclusive offers (6) Ticketing options (3) Lounge/Club (1) Appreciations (3) Miscellaneous (1)	Complimentary (2) Exclusives (8) Ticket options (1)
TOTAL	9 SSH incentives	24 SSH incentives	11 SSH incentives
Full season package (81 games)	Discounts (2) Exclusives (4) Ticket options (1) Payment plans (2)	Discounts (7) Complimentary (3) Exclusive offers (6) Ticketing options (3) Lounge/Club (1) Appreciations (4) Miscellaneous (1) Payment plan (1)	Complimentary (2) Exclusives (9) Ticket options (1)
TOTAL	9 SSH incentives	24 SSH incentives	12 SSH incentives

This does not mean that the actual incentives provided are identical (full season SSHs may receive different “exclusives” than 20-game SSHs), but it does indicate that the volume of incentives changes little as the number of games on a season ticket package increases.

In order to identify which season ticket-related independent variables were related to average game attendance, multiple regression (stepwise) was used, using a criterion of probability of F to enter $< .05$. (Average game attendance was used instead of total game attendance, since not all teams had 81 home games due to rain outs/postponements that were not made up if the game had no impact on the standings.) The goal was not to create a predictive model of average game attendance; rather, the purpose was to see if it was possible to isolate season ticket sales variables other than team performance (winning percentage) that contribute unique variation toward average game attendance.

It is important to recognize there is a significant limitation to this analysis, which uses regression to predict average game attendance, not season ticket sales. Average game attendance has been used as a surrogate variable because the number of season tickets sold by each MLB team is not publicly disclosed.² Predicting average game attendance would assume that season tickets as a percentage of total tickets sold is relatively constant, and anecdotal information suggests this is not likely to be a valid assumption. The present analysis serves as a starting point if such data does become available in the future.

Table 5

Stepwise Regression Results: Model Summary^a

Model Summary	R	R ²	Adjusted R ²	Standard Error of the Estimate
	.742 ^b	.550	.496	6515.03

^aDependent Variable: 2018 Average Game Attendance

^bPredictors: (Constant), 2016-18 Average Winning %, Bleacher Report Market Size Ranking, Club/Lounge

Table 6

Stepwise Regression Results: Coefficients

	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	Sig.
	<i>B</i>	Std. Error	Beta		
(Constant)	-9266.867	12341.526		-.751	.460
2016-18 Avg. Winning %	89474.075	22955.855	.567	3.898	.001
<i>Bleacher Report</i> , Mkt Size	-318.461	146.195	-.310	-2.178	.039
Club/Lounge	-5533.373	2682.830	-.284	-2.063	.050

As expected, 2016-18 average winning percentage was the most important predictor of the dependent variable 2018 average game attendance (Beta = .567 in a three-predictor model), followed by the market size as assessed by Bleacher Report (Beta = -.310) and the presence of a club/lounge for SSH (Beta = -.284).

²The authors have spoken to two MLB teams as well as a representative of MLB on multiple occasions in an attempt to obtain this information, including offering to sign NDAs, but both teams deferred to MLB and MLB declined to provide the data.

As expected, larger market teams were significantly associated with higher average game attendance (Kendall's Tau-B = $-.361$, sig = $.005$). The presence of a club/lounge only for SSHs was associated with lower average attendance (26,513 attendance when a SSH club/lounge is available, compared to 29,819 average attendance when there was no SSH club/lounge available.)

Discussion/Recommendations

There are five broad categories of promotional incentives to season seat holders (SSHs) that are common for most MLB teams.

- Twenty-nine MLB teams offer exclusives available only to SSHs, such as post-season ticket priority, access to private events, autograph sessions.
- Twenty-eight MLB teams offer complimentary items, ranging from tickets to off-season activities, watching batting practice, etc.
- Twenty-seven MLB teams offer discounts on some team-controlled factor, such as discounts on concessions, individual game tickets, merchandise, etc.
- Twenty-five MLB teams offer ticket options and services for SSHs, such as mobile access, personal ticket representative, ticket exchanges.
- Twenty-three MLB teams offer payment plans for SSHs.

Within each category, however, there is variation in what promotions teams offer. As an example, the Detroit Tigers offer SSHs seven different incentives in the "discounts" category:

- A discount on the price of each ticket (compared to individual game prices)
- A season parking discount
- A discount on individual game tickets
- A discount on team merchandise
- A discount on an appearance by "Paws" (Tiger's mascot)
- A discount to buy group tickets at the season ticket price
- An enhanced party suite discount

By comparison, the Tigers' division rival Chicago White Sox offer only four discounts: a discount on suites, a parking discount, a discount on a party area, and a discount on individual game tickets. Another division rival, the Kansas City Royals, offers only one discount (individual game tickets). The amount of differences between teams in the types of incentives offered within categories suggests a need for research at the league level to identify what works and what does not in comparable MLB markets.

As previously noted, research into the effectiveness of promotional incentives in MiLB and NBA has suggested differences of opinions between what fans/SSHs perceive as motivators for attendance, and what team marketing personnel perceive as motivators for attendance (Dick & Turner, 2007; Lanzillo, 2010). It is also

worth noting that MLB has emphasized a need to increase diversity in its fan base and employment (Castrovince, 2018). Given the difference in beliefs by fans over “what works” in promotion and the differences in wants from diverse fans, MLB teams should be encouraged to allow fans to tailor the promotional incentives to their own needs. The Milwaukee Brewers already do this, allowing potential SSHs to choose promotional incentives from different categories based on their desires. A new full season Brewers SSH can choose one incentive from a “silver” category and one from a “blue” category, while a new 20-game SSH can choose one incentive from the “blue” category (silver and blue are team colors). These incentives are shown in Table 7.

Table 7

A Sample of the Menu of Promotional Incentives for Milwaukee Brewer SSHs (New full season SSHs choose one silver and one blue incentive. 20 game SSHs choose one blue incentive)

Silver Incentives (partial list)	Blue Incentives (partial list)
Two Diamond Box tickets for a 2019 game	A “fast pass” for kids running the bases
Taking batting practice at Miller Park	A SSH polo shirt
An autographed print of Bob Uecker or a star Brewers player (Yelich, Braun, Cain)	An autographed print of former owner/MLB commissioner Bud Selig or a star Brewers player (Hader, Aguillar)
Watching pregame batting practice on the field	A Sandlot/Cinco de Mayo theme night bobblehead pack
A family play day at Miller Park	Johnson Controls Stadium Club passes
Sliding down Bernie Brewer’s slide	Breakfast with team mascots
Movie night on the field	Movie night on the field
Luncheon with GM David Stearns	SSH refillable cup
From “Season Tickets,” 2019 (https://www/mlb.com/brewers/tickets/season-tickets).	

An additional element in the consideration of season ticket incentives is the ability of social media to increase the effectiveness of season ticket incentives. The Pittsburgh Pirates include the type of social media interactions between SSHs and the team as an input into their predictive models of which SSHs are likely to renew or buy season tickets (Vijayan, 2011). Any efforts to diversify the MLB SSH base is likely to include fans who are younger and have a greater emphasis on female fans. Both of these groups tend to be significant consumers of social media. Teams are advised to consider how social media can be used in conjunction with incentives that target under-represented groups (women, younger fans, fans of color).

Previous research into dynamic pricing (Drea & Nahlik, 2016; Sweeting, 2012) has indicated that the use of dynamic pricing typically results in an increase in profitability for teams that use it. Dynamic pricing allows ticket sellers to move closer to a market equilibrium price by increasing the price on a good that is scarce as the event horizon (game date and time) approaches. Alternatively, when there is an oversupply of tickets relative to demand, the expectation is that

dynamic pricing in the secondary market would fall. The issue is whether the same concepts would apply to SSH when the event horizon is the date when all tickets are no longer reserved for season ticket packages and therefore become available for individual purchase. While season tickets prices would not rise or fall as this event horizon approaches, some teams do provide incentives that encourage SSH to renew early. Renewal after the date in which individual game tickets go on sale may result in a lower perceived seat value, since some premium seats may no longer be available for a full or half season.

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To Serve and Protect

Examining the Relationship between Selling Alcohol in College Football Venues and Negative Fan Behaviors

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Abstract

Currently, many university and college athletics administrators are weighing the decision to sell alcoholic beverages at on-campus sporting events. Prior studies have found negative behaviors related to binge drinking spike on college campuses during football gamedays. However, empirical research examining the effect of a policy change regarding the selling of alcoholic beverages in college athletic venues on fan behavior remains somewhat limited. The current study examined longitudinal campus police records at 12 institutions which have recently changed their in-venue alcohol policy. Results from the analysis confirm prior studies suggesting negative behaviors increase on home football gamedays. The decision to sell alcohol within the campus football stadium, however, has no statistical impact on the rates of deviant behaviors recorded by campus police.

Keywords: *Alcohol, drinking, collegiate football, university athletics*

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While alcoholic beverages are sold at nearly all professional sporting events, college athletics departments and university administrators have been slow to allow the sale of alcohol within their on-campus venues. This decision stems from a variety of reasons including: (a) negative public perception, (b) state and local statutes limiting the ability to serve on campus, and (c) a fear that serving alcohol may lead to an increase in negative fan behavior. The number of universities allowing alcohol sales, however, continues to increase as many athletic departments have found the need to offset decreasing in-game attendance and create additional revenue streams (Dodd, 2016; Rovell, 2014). Since 2015, the number of NCAA Division I schools selling alcohol has increased from 34 (Malone, 2015) to 78 at the start of the 2019 season (Hayes, 2019). These include traditional, top-tiered programs and marquee, Power-5 athletic conferences such as the Ohio State University (Myers, 2017), University of Texas (Cohen, 2017; Davis, 2016), and the Southeastern Conference (Sallee, 2019).

Prior research suggests sports fans consume alcohol more heavily than non-sports fans (Nelson & Wechsler, 2003), fans consume more on gamedays (Glassman et al., 2010; Glassman et al., 2007; Leavens et al., 2019; Merlo et al., 2011; Neal & Fromme, 2007), and increased levels of consumption on gamedays results in greater criminal activity (Lindo et al., 2018; Merlo et al., 2010; Rees & Schnepel, 2009). Concurrently, many college athletics administrators believe allowing alcohol sales at sporting events may produce significant increases in revenues (Huang & Dixon, 2013; Kimes, 2014; McDonald, 2020; Mitchell & Montgomery, 2015; Myers, 2017; Murphy, 2015; WWL Staff, 2019). For example, in 2017, the Ohio State University athletic department reported generating more than \$1.2 million in total net revenue from beer sales alone at Ohio Stadium (Myers, 2017). Despite this increase in revenue, the university also recorded 39 in-stadium arrests in 2017—an increase from the 22 occurring during the 2016 season. More recently, Louisiana State University's (LSU) Senior Athletic Director, Robert Munson, reported that Tiger Stadium spectators made approximately 280,000 beer and wine purchases, resulting in more than \$2.25 million in net revenue for LSU's athletic department during the 2019 football season (McDonald, 2020; WWL Staff, 2019). Interestingly, however, previous research has yet to confirm that the availability of alcohol within the venue has a positive impact on game-day attendance (Augustin et al., 2018; Chastain et al., 2017).

Although growing, there remains a dearth of empirical research exploring the relationship between fan behavior and crime with policy changes allowing alcohol sales at collegiate sport venues (Barry et al., 2019; Howell et al., 2015; Menaker & Sheptak Jr., 2018). Therefore, the primary objective of the present study is to investigate changes in levels of deviant behaviors and alcohol-related incidents during gamedays at universities which allow alcohol sales at their on-campus football venues. More specifically, the study examines a sample of universities which have recently changed their policy affording a pre- and post-policy comparison of behaviors.

Alcohol Usage on College Football Game Days

Alcohol consumption tends to spike among college students surrounding key events such as birthdays, holidays, and major campus sporting events (Glassman et al., 2010; Neal et al., 2005; Neighbors et al., 2011; Woodyard & Hallam, 2010). In fact, increased drinking has been positively correlated to the quality of football opponents particularly on the home campus (Barry et al., 2014; Menaker & Chaney, 2014; Neal & Fromme, 2007). Additionally, nonstudents attending college football games are also more likely to consume alcohol (Barry et al., 2014; Glassman et al., 2011; Haun et al., 2007), many times at dangerously high levels (Glassman et al., 2010; Glassman, et al., 2007; Merlo et al., 2011; Neal & Fromme, 2007). Researchers have also found a spike in alcohol-related deviant behaviors on college football gamedays (Barry et al., 2019; Lindo et al., 2018; Merlo et al., 2010; Rees & Schnepel, 2009). For example, college-aged rape incidences were reported at a 41% higher rate, and disorderly conduct, DUI, and liquor law violations went up 80%, on days of home college football games (Lindo et al., 2018).

Little research has explored the impacts of a change in stadium policy related to selling alcohol and conclusions from those studies have been mixed. In 1996, for example, the University of Colorado at Boulder eliminated alcohol sales at football games, resulting in a decrease in security incidents during the next season (Borrmann & Stone, 2001). Vingilis et al. (1992) found post-game DUI arrests near the ballpark did not significantly increase when Major League Baseball's Toronto Blue Jays began serving alcohol at home contests. More recently, Howell et al. (2015) analyzed in-venue alcohol-related incidents for 20 home football contests over three seasons at a single university, which included a change in policy during the years examined and found during the two years in which alcohol was prohibited, more alcohol-related incidents occurred than in the year in which it was allowed. When comparing reported crime and stadium ejection rates at college football stadia, Menaker and Chaney (2015) found a statistically significant relationship between a university's alcohol sales policy and game-day reports of criminal behavior. Further research has found game start time and opponent quality predicts increases of alcohol-related ejections from college football stadiums (Menaker et al., 2018). Most recently, in a case study examination of one Power Five university, Barry and colleagues (2019) saw a general upward trend in crime incidents on gameday weekends after an in-venue alcohol policy was implemented.

To our knowledge, however, no comprehensive study has investigated deviant fan behavior data at multiple institutions in which there has been a change in alcohol policy, despite calls to do so (Barry et al., 2019; Chastain et al., 2017). As a result, the purpose of the current study is to compare measures of negative fan behavior before and after a change in alcohol sales policy at on-campus college football venues. Specifically, the study examines two research questions: (RQ₁) whether differences in criminal offenses and alcohol-related incidents exist between collegiate football gamedays compared to non-gamedays; and (RQ₂)

whether differences in criminal offenses, alcohol-related incidents, and in-stadium offenses exist between gamedays before and after a policy change to sell alcohol in-venue.

Methodology

University campus police crime data were requested from schools in which alcohol is sold at an on-campus football stadium. At the time of data collection, 23 universities were identified as selling alcohol within on-campus football stadia (several other schools which sold alcohol play home games off campus, typically in a National Football League venue). Citing the Cleary Act, campus crime log data were requested from those universities for three years prior to and three years after allowing alcohol sales at their on-campus venues. Twelve schools, located in eight different states, provided timely and relevant data. Mean undergraduate enrollment for these institutions was approximately 20,000 students (range = 6,500 to 31,000 students). Four of the schools participated in a Power Five conference, while eight participated in a Group of Five conference. The mean population of the city in which the university resides for the sample was 301,789 (range = 30,955 to 1,345,000) and the mean MSA population for the schools in the sample was 2,445,046 (range = 139,044 to 7,573,136).

Once crime logs were acquired, the researchers collected the dates of home football games for three years prior and three years after a change in alcohol sales policy. For every game date selected, another fall non-gameday Saturday was selected. In all, a total of 400 game dates and 400 non-game dates were identified. The crime logs for these 800 dates contained a total of 4,905 criminal offenses and 2,352 alcohol-related incidents. Campus crime logs were analyzed and incidents were categorized into three subgroups: (a) campus criminal offenses, (b) campus alcohol related incidents, and (c) in-stadium criminal offenses.

A paired samples *t*-test was conducted to compare rates of criminal offenses and alcohol-related incidents between gameday Saturdays and non-gameday Saturdays (RQ₁). Next, paired samples *t*-tests were conducted to compare the rate of: (a) gameday criminal offenses, (b) gameday alcohol-related incidents, and (c) in-stadium criminal offenses before and after the decision to sell alcohol in-venue (RQ₂). The significance cutoff for all statistical tests was set at the .05-level.

Results

To address RQ₁, a paired samples *t*-test was conducted to compare both criminal offenses and alcohol-related incidents between gamedays and non-gamedays. Reported criminal offenses were significantly higher on gamedays ($M = 7.7$, $SD = 4.6$) than on non-gamedays [$M = 4.6$, $SD = 2.8$; $t(11) = -3.259$, $p = .008$], while reported alcohol-related incidents were also significantly higher on gamedays ($M = 4.0$, $SD = 3.3$) than on non-gamedays [$M = 2.0$, $SD = 1.5$; $t(11) = -2.831$, $p = .016$].

To address RQ₂, the researchers used the mean number of crime log entries for the three years pre-alcohol selling policy, which eliminated two of the univer-

sities in the sample. Conducting paired samples *t*-tests, mean scores were tested against the number of crime log entries the first, second, and third years after selling, as well as the three-year average after selling. The full results, including *p*-values and mean scores, can be found in Table 1. In all cases, crime log entry mean scores decreased post-alcohol sales policy; however, the mean differences were not statistically significant.

Discussion and Implications

Currently many college athletics departments and university administrators are considering or have altered their policy on the sale of alcoholic beverages at their on-campus athletics facilities. While these endeavors may yield additional financial returns (Cohen, 2017; Davis, 2016; McDonald, 2020; Myers, 2017; WWL Staff, 2019) such decisions carry significant consequences in terms of public perception, legal liability, and spectator safety (Myers, 2017). To date, administrators and university stakeholders have little empirical findings to assist with this specific decision-making process. As a result, the present study provides some quantitative context by exploring deviant behavior trends surrounding college football home games in which alcohol is available for sale.

The first research question posited whether deviant behavior increases on college football gamedays on campuses where alcohol is served in-venue. Echoing previous research findings (Barry et al., 2019; Lindo et al., 2018; Merlo et al., 2010; Rees & Schnepel, 2009), study findings suggest significantly more negative behaviors are registered by campus police on college gamedays compared to non-gameday Saturdays. College football gamedays at FBS schools tend to be major events and bring large numbers of visitors to a campus. This increase in numbers could explain some of the difference in campus police activity. Excessive drinking by both students and non-student fans on college gamedays may also contribute to the uptick in reported incidents. While the purpose of the study was not to determine the cause of changes in number of incidents, the present findings support prior research suggesting college football gamedays produce a greater number of negative behavior incidents, both in general crimes and alcohol-related negative behaviors, on campus (e.g., Barry et al., 2019; Menaker & Sheptak, Jr., 2018).

The focus of the second research question was whether the availability of alcohol for sale within college football stadia has an impact on the number of negative incidents recorded by campus police compared to the same venue prior to the introduction of alcohol sales. The results point to a reduction in negative behaviors when alcohol is sold, which is counter to the findings of Barry and colleagues (2019). Three different measures were utilized to test the effects; number of recorded gameday criminal offenses, number of recorded gameday alcohol-related incidents, and number of recorded in-stadium criminal offenses. For all three categories, the mean number of incidents actually decreased. For a small number of individual schools, criminal and negative behavior did increase slightly after the introduction of alcohol sales, but for the schools with the most total incidents,

Table 1
Results of paired t-tests between pre-policy change and post-policy change

	3-Year Mean, Pre Policy		First-Year Post Policy		Δ	Correlation		p	df	Paired Samples	
	M	SD	M	SD		r	p			t	p
Criminal Offenses	54.63	46.12	48.30	33.36	-6.33	0.918	< 0.001	9	0.982	0.352	
Alcohol-related Incidents	28.43	33.27	22.70	18.29	-5.73	0.866	< 0.001	9	0.921	0.381	
In-Stadium Offenses	15.30	25.81	8.10	9.43	-7.20	0.856	0.002	9	1.238	0.247	
	3-Year Mean, Pre Policy		Second Year Post Policy		Δ	Correlation			Paired Samples		
	M	SD	M	SD		r	p	df	t	p	
Criminal Offenses	54.63	46.12	42.20	30.32	-12.43	0.946	< 0.001	9	1.964	0.081	
Alcohol-related Incidents	28.43	33.27	19.80	17.33	-8.63	0.925	< 0.001	9	1.478	0.174	
In-Stadium Offenses	15.30	25.81	7.30	8.51	-8.00	0.945	< 0.001	9	1.406	0.193	
	3-Year Mean, Pre Policy		Third Year Post Policy		Δ	Correlation			Paired Samples		
	M	SD	M	SD		r	p	df	t	p	
Criminal Offenses	54.63	46.12	39.00	32.53	-15.63	0.694	0.038	8	1.345	0.215	
Alcohol-related Incidents	28.43	33.27	22.44	27.50	-5.99	0.669	0.049	8	0.600	0.565	
In-Stadium Offenses	15.30	25.81	8.89	12.65	-6.41	0.699	0.036	8	1.191	0.268	
	3-Year Mean, Pre Policy		3-Year Mean, Post Policy		Δ	Correlation			Paired Samples		
	M	SD	M	SD		r	p	df	t	p	
Criminal Offenses	54.63	46.12	43.75	30.33	-10.88	0.885	0.001	9	1.439	0.184	
Alcohol-related Incidents	28.43	33.27	22.00	19.82	-6.43	0.831	0.003	9	1.012	0.338	
In-Stadium Offenses	15.30	25.81	7.97	9.10	-7.33	0.899	< 0.001	9	1.283	0.232	

recorded negative behavior lowered considerably. Overall, averages went down across all institutions.

Several explanations exist as to why these differences emerged. First, schools introducing in-venue alcohol sales are also likely to increase security and safety measures accompanying the decision. For example, Ohio State reported the additional revenue generated through alcohol sales was directed toward funding four additional university police officer positions, increased security, and other campus safety initiatives (Myers, 2017). Second, by adding the availability of alcohol within the venue, spectators may reduce the amount they drink outside the venue because they are now able to maintain an alcohol-related “buzz” in the venue by purchasing beverages. This could reduce binge drinking immediately prior to entering the stadium (Glassman et al., 2010; Glassman et al, 2007; Leavens et al., 2019; Merlo et al., 2011; Neal & Fromme, 2007). Third, alcohol sold within the venue is more cost prohibitive (and can only be purchased in lower quantities (i.e., limiting patrons to the purchase of one or two beverages at a time).

Despite providing new findings on the impact of alcohol sales at college football venues, the present study is not without its own limitations. First, the analysis was limited to only 12 D1 universities, when currently 78 D1 institutions serve alcohol in some capacity within their football venues. Additionally, only four of these schools were members of a Power Five conference, while the other eight were members in a Group of Five conference. Future research should endeavor to examine a larger sample of universities over a more extended period of time. Further work in this area would benefit university administration, college athletic departments, and campus/local law enforcement agencies. Finally, future research should also assess the impact of newly formed initiatives surrounding alcohol sales, such as increased gameday security presence and campus social media campaigns. Exploration of these issues will provide local officials and university administrators the most complete information when deciding on the extent to which to allow alcohol sales their respective athletic and campus venues.

While university and athletic administrators continue to introduce alcohol sales at their athletic events, the associated health and social risks should not be overlooked (Nietzel, 2018). As a result, continued research in this area is warranted to provide a better understanding of these issues as these discussions progress. Ultimately, it is important that university administrators, athletic departments, public health officials, and local law enforcement agencies work collaboratively to assess the potential benefits of increased financial gains against the cost of increased alcohol-related behavior.

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Editorial Guidelines for Authors

The goal of *JASM* is to be a valuable addition to the practical, specialist literature by focusing on empirical results and conceptual work that can inform sport industry practice. Accordingly, only manuscripts that make a strong contribution to the sport industry based on practical, conceptual/empirical grounding will be considered for publication.

Manuscripts may address a wide range of issues in sport management but must be presented concisely in order to quickly communicate important pieces of new and innovative research. For example, theoretical manuscripts could be presented as a thought-provoking precursor to a fully developed manuscript to be submitted to elsewhere. Similarly, an experimental or empirical manuscript should offer robust, thorough, and complete results, but should be presented in a digestible, concise, and practical tone.

In order to meet the applied focus of the journal, manuscripts must provide readers a medium to digest a large amount of material in a usable form. The following are important aspects of this concise format:

- Manuscripts must be kept to approximately 3,000 words (equivalent to approximately 15-16 pages, double spaced, 12pt, Times New Roman font) including references, tables, figures, and illustrations.
- Abstracts should not exceed 100 words and 3-5 keywords should be included after the abstract to guide the reader.
- Review of literature sections should be brief and perhaps even included in the manuscript preamble (1-1.5 page maximum). Authors should only cite the most relevant works guiding/supporting the submitted manuscript (e.g., “see X, Y, and Z for a complete review” is a highly encouraged manner to present this material). Authors should offer succinct objectives of the work and adequate background that avoids a detailed literature survey or a summary of prior results.
- Authors should try, when possible, to avoid lengthy statistical dialogue, but instead (as above) cite works that readers can reference for a complete review of the analytic technique employed. We encourage robust statistical analyses but results presentations should be granular, explanatory, digestible, and practically focused.
- Implications for the research should be presented in a manner consistent with the practical scope of *JASM*. All submitted manuscripts must contain an implications section for initial review consideration.

Reference pages should adhere to the guidelines included in the *Publication Manual of the American Psychological Association: 7th Edition*. Authors are responsible for precise execution of this requirement. Please note that periods after authors' initials require ONE space before the next initial (e.g., Walker, M. B.), and that ONE space is to be used after each period (e.g., Andrew, D. P. S. (2012). The study of...).

Prose Guide for Authors

*Note: Section titles do not have to be consistent with those presented below.

I. Research Problem(s) Addressed

Very clearly and concisely state the purpose of the manuscript and what it examined. A concise and focused preamble should be wrapped around an equally concise and focused purpose statement.

Example: *The purpose of this manuscript was to examine the attitudes of NCAA Division I men's intercollegiate basketball season ticket holders regarding seat assessment fees.*

a. State the importance of the issue(s) contained in the manuscript and why they are worthy of the practitioner's time and attention. Alternatively, if the study is more theoretical/conceptual in nature, this information should describe why the issue being discussed is worthy of future researcher attention.

Example: *This research contains timely information that reveals a significant number of season ticket holders surveyed were unhappy with the additional assessment fees that came with new arena construction and/or retrofitting/redevelopment. The research also revealed that a significant number of the season ticket holders were willing to pay such fees if guaranteed the first rights of refusal to purchase tickets, regardless of their levels of understanding of and/or agreement with the purpose of the fee.*

b. Identify the intended audience/stakeholder group(s) the study was designed to inform. This information should identify any gaps in the literature, or pressing need for the study in sport and sport-related disciplines.

Example: *This article is likely useful to intercollegiate athletics department personnel and other major stakeholders of intercollegiate athletics, particularly those involved with or considering capital campaigns that include new facility development, facility retrofitting, reseating, or ticket price adjustments. Other sport managers at varying levels of sport who are involved with revenue generation through seating will also find this article useful.*

II. Background, Literature Review, and/or Framework

Provide a detailed version of item “b” above that clearly explains the important facets and background of the issues examined in the manuscript. It should resemble an extremely shortened version of the literature review including only references that are so germane to the manuscript they cannot be ignored. If utilized, theoretical frameworks should also be presented in this section but should be tightly woven into the related/core literature. As stated above, this section should be 1-1.5 pages.

III. Method

Clearly explain what you measured and how you measured it. While this section should be concise, it should also be detailed enough to assist future scholars with both replication and extension of the presented work. If the manuscript is theoretical/conceptual in nature, this section can be used to offer testable propositions, or clearly explain how the concept(s) being discussed might be applied to sport and sport-related organizations.

IV. Results

In very simplistic language, explain everything that the study found or did not find. Bring as little statistical jargon into this section as possible (with the exceptions of “significant” and “nonsignificant” findings and explanations regarding the size of the significant effects). Instead, explain the results/major logical points of the study in everyday terms. Effect sizes or the amount of explained variance, while necessary, should be presented in practical easy to understand language.

V. Discussion and Implications

Tell why the findings/conclusions of this study matter, state how things should or should not be done differently as a result of the study, and underscore the importance of the research to practitioners. Moreover, what constructive things can readers learn from the results? Simply, answer/amplify the “so what” question. Explain who can use this manuscript and how the practical implications are useful for those in the field. If the manuscript is theoretical/conceptual in nature, clear prescriptions for future research should be offered (i.e., in the form of an agenda presentation, but in everyday language). Beyond restating what is contained in the preamble, this information should be significantly more focused on the feedback loop to the theory and/or concepts under investigation.