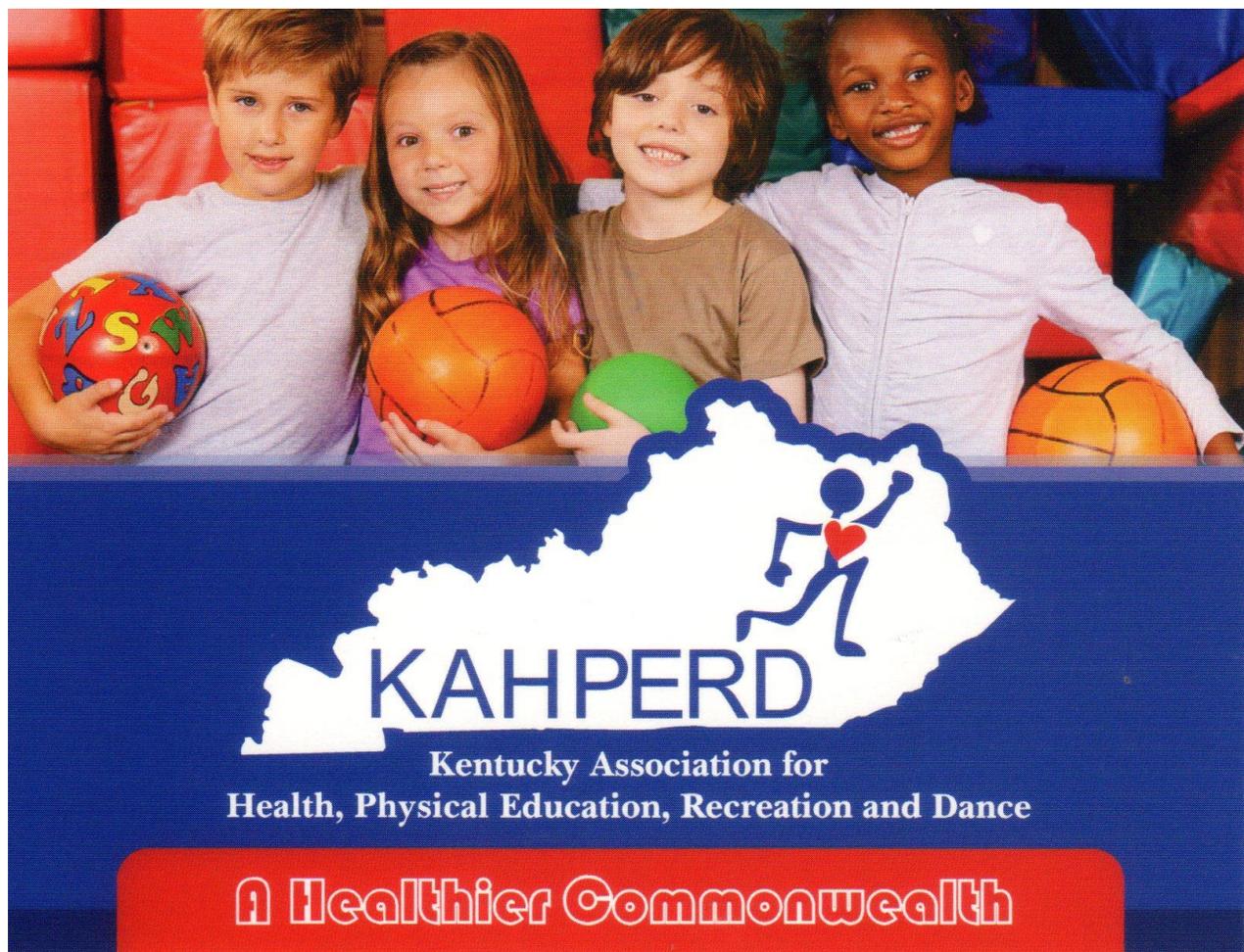


2019 Spring

Kentucky Association of Health, Physical Education,  
Recreation and Dance



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# KAHPERD Journal

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## A Message from the KAHPERD President

Greetings KAHPERD friends,

I am truly humbled and honored to serve as your 2019 KAHPERD President. I have been involved with this organization since the mid 90's when I was encouraged to attend as an undergrad. The connections we make through this professional organization have a greater collective impact on the students and communities we serve. The theme of this year's conference is HEROIC EFFORTS. Educators truly are heroes and give tirelessly to make the world around them a little better. Dr. Gina Gonzalez, Dr. Steve Chen, and many other reviewers have made many heroic efforts to produce another excellent KAHPERD Journal. Contributing authors have also made heroic efforts to continue the advancement of our profession. I hope you value their contribution and use their research to advocate for the mission of KAHPERD. I wanted to express my sincere gratitude to each of you for the efforts you make to improve the lives of people in your community. You are my HEROES! Enjoy the 2019 KAHPERD journal.

Sincerely,

Daniel Hill  
KAHPERD President 2019

### Acknowledgement

As the Editors of the KAHPERD Journal, we would like to show our appreciation to the following guest-reviewers for their assistance in reviewing this current issue.

Dr. Chase M. L. Smith, University of Southern Indiana; Dr. Cheng-ming Hu, Southeast Missouri University; Dr. Michael Bradley, Eastern Kentucky University; Dr. Ted Peetz, Belmont University; Mr. Eric Street, Midway College; Dr. Tricia Jordan, Western Kentucky University, Dr. Manuel Probst, Morehead State University; Dr. Kristi King, University of Louisville; Mr. Christian Goodyear, University of Louisville  
Dr. Elizabeth Ash, Morehead State University, Dr. Laurie Larkin, Eastern Kentucky University

Sincerely,

Gina Blunt Gonzalez, KAHPERD Journal Co-Editor  
Steve Chen, KAHPERD Journal Co-Editor

## **KAHPERD Journal Submission Guideline**

### **SUBMISSION OF A PAPER**

The KAHPERD Journal is published twice yearly (spring and fall) by the Kentucky Association for Health, Physical Education, Recreation, and Dance. The journal welcomes the submission of empirical research papers, articles/commentaries, best practices/strategies, interviews, research abstracts (spring Issue only) and book reviews from academics and practitioners. Please read the information below about the aims and scope of the journal, the format and style for submitted material and the submissions protocol. Your work will more likely to be published, if you follow the following guidelines thoroughly.

Articles are accepted via an electronic attachment (must be in Microsoft Word format, doc or docx) through e-mail to the editor before the deadline dates. Submissions should be sent to either one of the co-editors, Gina Gonzalez: [g.gonzalez@moreheadstate.edu](mailto:g.gonzalez@moreheadstate.edu) or Steve Chen: [s.chen@moreheadstate.edu](mailto:s.chen@moreheadstate.edu)  
Deadlines: Spring issue—March 1 & fall issue—September 1

### **AIMS AND SCOPE**

The main mission is to bring together academics and practitioners to further the knowledge and understanding of issues and topics related to health, physical education, sport administration and marketing, exercise science, sport coaching, dance, and recreation, etc. We encourage submissions relating to these topics from a variety of perspectives.

### **CONTENT**

All articles should be written primarily to inform senior practitioners and academics involved in areas of health, physical education, recreation and dance.

Research articles should be well grounded conceptually and theoretically, and be methodologically sound. Qualitative and quantitative pieces of research are equally appropriate. A good format to follow would be: Introduction, Literature Review, Methodology, Results, & Discussion, Conclusion, and Implication.

Articles may include an abstract of approximately 150 words including the rationale for the study, methods used, key findings and conclusions. Article should not exceed 10 single-spaced pages (not including references, tables, and figures).

Reviews of books and/or reports are welcome (around 1000-2000 words). Information concerning the book/report must be sent to the editor.

Interviews (it would be nice to discuss with the editor beforehand) and best practice/strategy papers of 1,500-3,000 words should be objective and informative rather than promotional and should follow the following format: Objective/Background/Discussion and Practical Implication.

Research abstracts (300 words or less) are welcome. The submitted abstracts should have been presented (either an oral or a poster presentation) in the KAHPERD annual conference in the previous year.

\*The editors are keen to discuss and advise on proposed research projects, but this is no guarantee of publication.

### **FORMAT AND STYLE**

Manuscripts should follow the form of the guidelines for publications outlined in the 6<sup>th</sup> edition of the Publication Manual of the American Psychological Association.

Tables, charts, pictures, diagrams, drawings and figures should be in black and white, placed on separate pages at the end of the manuscript. They must be submitted photo ready and reproduced to fit into a standard print column of 3.5 inches. Only one copy of each illustration is required, and captions and proper

citations should be typed on the bottom of the table and diagrams. Jargon should be reduced to a minimum, with technical language and acronyms clearly defined. The accuracy of any citations is the responsibility of the author(s).

For more specific style questions, please consult a recent edition of the journal.

### **SUBMISSIONS PROTOCOL**

Submission of a paper to the publication implies agreement of the author(s) that copyright rests with KAHPERD Journal when the paper is published.

KAHPERD Journal will not accept any submissions that are under review with other publications. All manuscripts submitted will be peer reviewed by 3 members of the editorial board. To be accepted for publication in the journal, the article must be approved by no less than 2 of the 3 reviewers. Authors will normally receive a decision regarding publication within six to 12 weeks. Rejected manuscripts will not be returned.



**(Peer Reviewed Article)**

## **Analytical Reading: Primary Scientific Literature**

*Brian Jones, Georgetown College (brian\_jones@georgetowncollege.edu)*  
*Jamie Hale, Eastern Kentucky University*

### **Abstract**

The purpose of the current paper is to present a pedagogical method for teaching students to read, analyze, and evaluate research methodology and conclusions in primary scientific literature. Analytical reading of primary scientific literature is an essential skill for advanced undergraduate and graduate students. Evaluating research involves healthy criticism and debate. Students should be introduced to this process of criticism and analysis early and throughout their college careers. These are skills students can use for their own research papers, theses, and dissertations, and can also ensure future clinical practice is evidence-based. The present method is grounded in research on cognitive and learning psychology and provides a structure for developing analytical reading skills in the classroom. Our conclusions are supported primarily by teaching evaluations, personal communications with students, and experience. The method presented is a practical method for utilizing findings from educational, teaching, and psychological research in the classroom.

*Keywords:* critical thinking, primary literature, science teaching, reading research

### **Analytical Reading of Primary Scientific Literature**

Key skills for undergraduates of any discipline are locating, reading, and evaluating primary scientific literature (Ball & Pelco, 2006). Those skills will further benefit those attending graduate school, professional school, and will be beneficial to those becoming clinicians or researchers. Whatever career they enter, it is vital that they acquire the skills to get new information directly from the sources and acquire the ability to evaluate the information. Research demonstrates that improving the statistical, probabilistic thinking needed to evaluate health and social science literature has a greater carryover into everyday life than does the sort of deterministic thinking required by disciplines like formal logic or chemistry (Lehman, Lempert, & Nisbett, 1998). These analytical reasoning skills may help students think more clearly about everyday events (Halpern, 2001; Lehman & Nisbett, 1990; Lehman, Lempert, & Nisbett, 1998; Morling, 2012).

This paper describes a method used by one of the authors to successfully develop these skills in both advanced undergraduates and graduate students in exercise physiology. It is inspired by the “Learning Paradigm” of higher education described by Barr and Tagg (1995). This method focuses the attention on learning outcomes using many different types of teaching – lecture, discussion, reading, and writing. It allows students to engage the material directly and interact with both their classmates and the instructor. Analyses of primary research performed throughout the semester utilize the student-centered problem based learning (PBL) method and emphasizes time-on-task through practice and formative feedback (Barr & Tagg, 1995; Kilroy, 2004; Moffett & Fleisher, 2013).

Research suggests that students retain very few of the details that they are taught in college courses, but rather tend to remember general concepts (Roediger & McDermott, 1995; Schacter, 1999). The analytical reading method described follows from these findings. The purpose is to develop a skill for finding and evaluating information rather than attempting to focus excessively on facts and details. Using the method described will teach students to locate information from reliable sources and evaluate it using a systematic rubric.

## **Analytical Reading Method**

### *Concepts Instruction*

The analytical reading method begins with a lecture on the layout of a scientific paper along with readings to provide additional information and to serve as reference materials throughout the course. Students are taught to be able to:

- Distinguish between peer-reviewed, trade, and popular literature
- Understand the differences between the types of primary literature including original investigations, meta-analyses, systematic reviews, brief reviews, and case reports, and symposia
- Know the relevance of each type of paper to the process of scientific investigation and literature review
- Identify the standard parts of a study – abstract, introduction, methods, results, and discussion – and what information they contain
- Understand different research designs and their strengths and limitations including:
  - Cross-sectional vs Longitudinal
  - Experimental vs Descriptive
  - Quantitative vs Qualitative
  - Importance of placebo, control, blinding, and randomization
- Know the fundamentals of statistical theory and methodology
- Understand the sources of error, bias, and unfounded conclusions

The exact method of teaching this information should vary with the instructor and the level of the students. Those students who have already completed coursework in research methods and statistics may only need a refresher on this material, while others will be learning it for the first time, and may need more in-depth instruction. Success depends on engaging the students on a difficulty level appropriate to their knowledge (Moffett & Fleisher, 2013). In an effort to assess the students' level of ability in relevant skills, a short questionnaire about previous coursework and or a self-assessment might be administered at the beginning of the semester. These type of assessments may help instructors design classes that coordinate difficulty with the current ability (Lazarowitz & Lieb, 2006). For a more direct assessment of relevant skills, a diagnostic exam may be administered (Treagust, 1988). Both of these techniques allow the students to have input regarding the pace of the course.

If the students have a weak background in scientific research it may be appropriate to give the informational lectures and readings as a single block of instruction early in the semester before

beginning the critical reading assignments. Alternatively, these research topics can be addressed in mini-lectures, readings, and discussions spread throughout the semester when they are particularly relevant to the studies under scrutiny. This latter may work better for graduate and well-prepared undergraduate students.

### *Skills Instruction*

A systematic process is essential to the analytical reading method. It rests on the information taught in the concepts instruction, but it involves learning by doing; that is, by developing appropriate procedural skills (Brown, 2006; Moffett & Fleisher, 2013; Rangachari, 2010). Formative assessments are process-oriented and students are given credit for participation and improvement while giving continual feedback to help them improve their work (Bell & Cowie, 2001; Moffett & Fleisher, 2013). This stands in contrast to the summative assessment in which graded test or project is given to measure knowledge or ability. Holding any summative assessments until after a cycle of formative assessments encourages students to explore without fear of poor grades.

The scientific literature critique process involves developing answers to the following questions about each study. Students can be provided with a worksheet to fill out or answer the questions with a short writing assignment to be submitted before class. Just as in Round and Campbell's (2013) "Figure Facts" method, the preparation of these assignments prior to class requires a substantial engagement with the material before the in-class discussion.

### *Evaluation Rubric*

Students are provided with a question-based rubric that is used to evaluate each work of primary literature. Ideally, students will complete these assignments and submit them electronically prior to class, either via email or upload to a learning management system such as Blackboard or Moodle. An author of this article has had success with allowing the students to turn in their assignments at the beginning of class prior to the discussion.

The format of the rubric is flexible, but several core questions are essential for analysis. The rubric is divided into different sections that correspond to the sections typically found in a scientific research paper. The following provides a guide that has been utilized by the authors to teach different levels of students.

- Introduction
  1. Does the author(s) provide sufficient background and context for the study?
  2. Is the introduction well-written enough to be easily understood by someone familiar with that scientific discipline?
  3. What previous research or observations prompted the current study?
  4. Does the rationale behind the current study follow logically from the previous findings or observations?
  5. What is the purpose of the study and if it involves hypotheses, what are the hypotheses?

6. Are the hypotheses clearly conceptualized and operationalized?
- Subjects (Non-Human Animal)
    1. What type of animals were used and why?
    2. How many animals were used?
    3. If the animal study is meant to have human applications, does the use of an animal model used seem valid, ethical, and justifiable?
  - Participants (Human)
    1. Who participated in this study, and how many subjects were included?
    2. What were the inclusion, and exclusion criteria for participation?
    3. How were the participants recruited?
    4. Were the participants, participation criteria, and recruitment methods appropriate for the study given the hypothesis and methods?
  - Methods and Materials
    1. What type of study was performed?
    2. What was the overall research design? Please list all groups and subgroups and create a flow chart of the research process.
    3. How was each variable or concept operationalized?
    4. What methods were used to measure or evaluate these variables?
    5. What statistical methods (if the study was quantitative) were used to analyze the data?
    6. Was the study design appropriate to test the hypotheses?
    7. Did the study lack any important features such as control, placebo, blinding, or familiarization?
    8. Were the testing and evaluation methods appropriate and valid?
    9. Were the statistical analyses appropriate for the data collected?
    10. Was the methods section written in enough detail that another researcher could replicate the study?
  - Results
    1. What were the main findings of the study and did they support the hypotheses?
    2. Did the authors clear and understandable tables and figures?
    3. Did the authors report all major findings and important results that were not primary hypotheses?
    4. Were any measures of instrument reliability performed and did they yield adequate results?
    5. Were there any nearly significant trends in the analysis?
  - Discussion
    1. What were the main findings as the authors summarized them and did they support the hypotheses or not?
    2. Did the current study follow or go against the bulk of the literature?
    3. What were the strengths and weaknesses of the study as identified by the authors?

4. What were the conclusions and/or applications reached by the authors based on the results of the study?
  5. Were those findings that were statistically significant also practically or clinically significant?
  6. Did this study add something to the body of scientific research?
  7. Was the discussion thorough and easy to read for someone in the field?
  8. Were all of the conclusions justified by the results of the study?
- Overall Evaluation and Suggestions
    1. How does this study compare to other studies on this topic?
    2. What practical information did you get from reading this study?
    3. What would you do differently had done this study?

### **Practicing Analytical Reading Skills**

There are three methods of practicing skills and they are presented here in order of increasing difficulty or increased student responsibility. Each of these methods has been designed for use in a relatively small face-to-face class environment.

In the first method the instructor assigns readings and the students evaluate them according to a rubric. Grades and feedback are provided on these assignments. Assessment of these assignments is primarily formative and any summative assessments on analytical thinking are held until later in the semester after sufficient practice. In addition to individual comments, it is useful for the instructor to lead class discussions about the study by asking relevant questions and providing information about subject matter and methodology. During these discussions the instructor can ensure and track participation by asking everyone for answers or comments.

The second method is to assign one of the students to lead the class discussion on the papers assigned and evaluated. The course instructor should lead the first discussion to provide an example of what is expected during student-led discussions. Each student should be designated as the discussion leader at some point in the semester, perhaps more than once for smaller classes. The student discussion leaders should be given enough notice to prepare sufficiently. Instructors will then blend into the class and act as participants and peers. They can step in to offer suggestions and advice when appropriate.

A more challenging variation of the second method is to pick a student at random the day of class to lead the discussion. In smaller classes with highly motivated students, this method can work well. The uncertainty tends to encourage more thorough preparation before class. In graduate classes with advanced students, student discussion-leaders may be assigned the tasks of locating and providing the articles to the rest of the class.

As with the first method of assigning rubric sheets, most of the assessment of the student-led methods should be formative rather than summative. Grades are based on preparation and participation and feedback is provided during the discussion process. Periodic summative assessments could be incorporated throughout to test for specific critical analysis skills.

## Discussion and Conclusions

The purpose of this paper has been to provide specific pedagogical methods for teaching analytical thinking through the analysis of primary scientific literature. Although it is grounded in previous educational and psychological research, no quantitative data were collected on these specific methods. The positive experiences of the authors in the use of these specific critical thinking instructional methods suggest support for its effectiveness.

One author has implemented the analytic reading method mentioned here in graduate level physiology, nutrition, and exercise physiology courses, and in advanced undergraduate seminars at two different higher education institutions. The first institution was a larger research institution with graduate and undergraduate students and the other a small liberal arts college. Student feedback at both sites, from on standardized institutional student evaluation and through personal communication with students, has been consistently positive. These findings agree with research that have evaluated student-centered, PBL methods that fall under the “Learning Paradigm” described by numerous researchers (Barr & Tagg, 1995; Ball & Pelco, 2006; Kilroy, 2004; Moffett, 2013). Several students have remarked that the method described in the current paper was one of the most useful teaching methods that they had experienced during their higher educational careers. Other students remarked that this process was especially beneficial when they were later completing their theses and dissertations, or when they used evidence-based practice in their careers as clinicians.

The primary challenges in implementing this method are student motivation and class size. A group of unmotivated students could create a lack of participation or preparation. Due to the interactivity required for this method, large sections could pose a problem unless effective management strategies can be found (Ball & Pelco, 2006; Rangachari, 2010). The analytical reading method is based on high levels of class participation and work outside the classroom. Barr and Tagg (1995) address this as one of the general difficulties, when shifting from a teacher-oriented to student-oriented paradigm. However, when students feel more in control of the course direction, it tends to increase compliance. The enhanced student satisfaction that formative pre-assessment questionnaires or diagnostic tests have demonstrated may help offset student's motivational barriers (Barr & Tagg, 1995; Lazarowitz & Lieb, 2006).

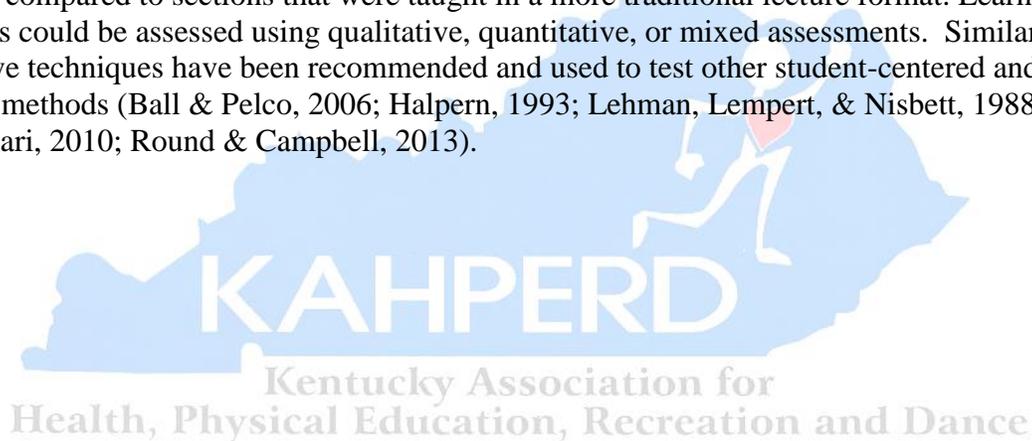
Lack of motivation or participation can occur in graduate programs, but from one author's experiences, it is much more likely with undergraduates. Rangachari (2010) supports this observation in his paper on using active learning to teach peer review. His method, similar to this one, is better suited for older or more advanced students, who exhibit independence, self-motivation, and can draw on past experiences (Rangachari, 2010).

Absences or failure to prepare properly by the assigned student-leaders can cause disruptions, when discussions are student led. The course instructor typically has to step in and take over, defeating the purpose of the exercise. Grade penalties can be used to promote compliance, but the theory and research behind active learning suggests that much of its value comes from student engagement (Ball & Pelco, 2006; Barr & Tagg, 1995; Bell & Cowie, 2001; Kilroy, 2004). More

research on techniques and methods that can be used to enhance motivation and address problems due to low participation is needed.

Class size could be a critical factor in discussion intensive or formative evaluative classes (Ball & Pelco, 2006; Rangachari, 2010). This method is most suitable for small groups, because of the discussion requirement. Large classes may make this impractical unless some method of web based communication is used such as discussion forums or chat rooms. Gillen and colleagues (2004) describe the effectiveness of an online tutorial to help non science majors read primary literature effectively. A possible alternative would be to create smaller groups that would meet at different times or places on specific occasions during the course. Leadership logistics would need to be decided but might include upper level graduate students, teaching assistants, or cooperation among several faculty members. Barr and Tagg (1995) describe inter-departmental faculty cooperation and the involvement of advanced students as assistant facilitators as part of the shift into the new “Learning Paradigm”.

Finally, research on the specific method described in this paper should involve multiple sections of the same course taught by the same instructor. Those sections that used analytical reading method could be compared to sections that were taught in a more traditional lecture format. Learning outcomes could be assessed using qualitative, quantitative, or mixed assessments. Similar evaluative techniques have been recommended and used to test other student-centered and active learning methods (Ball & Pelco, 2006; Halpern, 1993; Lehman, Lempert, & Nisbett, 1988; Rangachari, 2010; Round & Campbell, 2013).



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**(Peer Reviewed Article)****A Pilot Study to Understand Visitor Preferences of a Nature-Based Municipal Park**

*Erin E Jones, Eastern Kentucky University*

*Melissa Hoover, Eastern Kentucky University*

*Michael J. Bradley, Eastern Kentucky University*

*James N. Maples, Eastern Kentucky University*

**Introduction**

The purpose of this study was to investigate what type of clientele is visiting the City of Richmond's Camp Catalpa. Additionally, the researchers were to investigate how the clientele were hearing about the park. Camp Catalpa, in the past, has not been a well-attended park and in the recent months a great deal of work has been done to the park to better it for the community. Even though the Richmond Parks department has made some improvements to the park, there has not been a large sum of money spent on marketing the new improvements that have been made to the park. While the visiting trends were being researched, the City of Richmond wanted to see how the visitors were hearing about the park. Hearing how the visitors were learning about the improvements will help the staff of the City of Richmond Parks and Recreation department see how they should continue to research and if they need to add a method of marketing, then which one they should focus on.

This study will also help the City of Richmond Park and Recreation department see which improvements have been well received from the community and which areas the community feels like they still need to make. The research from this study will help the City of Richmond Parks and Recreation department prioritize which projects they want to accomplish and in what order they will complete the projects in. The research will also help the City of Richmond Parks and Recreation department decide on how they will communicate with the community on which improvements will be made and the timeline of when they will start and hope to be completed by. This study will help the City of Richmond Parks and Recreation department help better serve their community by knowing why they are visiting Camp Catalpa and what the community thinks that Camp Catalpa is lacking and how the City of Richmond Parks and Recreation department can strategically use the data that was collected from the survey to add additional services to the park and to effectively and efficiently share the improvements with anticipated completion dates with the community. If the City of Richmond listens to their patrons and adds amenities that the community is requesting, then Camp Catalpa has the possibility to become a more utilized and thought about park when a member of the Richmond community wants to go visit a park. Camp Catalpa can be a designation for a staycation in Richmond and be known as a best kept secret.

**Literature Review**

The City of Richmond purchased Lake Reba and neighboring land, approximately 300 acres, including what is now known as Camp Catalpa Park, from Richmond Water and Light Company on December 31 in 1931(Gum, 1939). The area was then a transient camp while a group of men were brought in to work on the Lake Reba dam. The men were stationed at what would later be known as Camp Catalpa for approximately two years. The land was 300 acres of pure natural beauty. The men worked together to not only construct the dam, but to compile and construct a home on the land that would later be known as Camp Catalpa. These men were paving the way for many generations to be able to utilize this area and they did not even know it. “It’s worth seeing this transient group which is building its home in the midst of a woodland. They started from scratch, all right. A road has been cleared beyond the lake, and it is possible to drive up the hill after crossing the dam. That is, on a Sunday the trip can be made. A guard who is stationed at the foot of the hill will turn you back unless you have business with the camp commander. 4 It was said that this group of men created and built with their own hands their own community within the camp. A temporary kitchen was built as well as living quarters, a recreation hall and a church. Following the area being a transient camp, it served as a camp for youth. The National Youth Administration or NYA came in 1936 and young people camped at the site while working on different government projects (Gum, 1939).

The area was un-touched for many years and this creates an optimal environment for wildlife, plants and trees. Some community members were all for the city turning the park into a bird sanctuary and others were against this change. In the end, Camp Catalpa was designated as a bird sanctuary. In the late 1970’s, the City completed major improvements to the park to attract additional users. Hiking trails were created, picnic shelters were constructed with outdoor grills, restroom facilities were built, and a large gazebo was constructed (Davey Resource Group, 2009). In 2007 a disc golf course was added and built by the Richmond Disc Golf Club. Members of the Richmond Disc Golf Club proposed the course and volunteered their labor and equipment to build it, said club present George Campbell. Club members spent between \$2,000 and \$3,000 on the effort, in addition to numerous hours of labor, he said. It was completed in mid-October. In 2007, a 9-tee, 18-hole disc golf course was constructed in Camp Catalpa, partially funded by the Richmond Parks and Recreation Board and built and partially funded by Richmond Disc Golf Club. At this time, Camp Catalpa hosts the only disc golf course in Richmond. Avid disc golfers visit Camp Catalpa to enjoy their favorite activity without having to travel to Lexington or other areas. Today, the Park provides these and other amenities to the public, including two picnic tables, a play area, and a nature trail. Catalpa has been a popular place for family reunions and other gatherings,” Wilkerson said (Camp Catalpa, 2017). The picnic tables, gazebo and grill areas are often being utilized by families for birthday parties, family reunions or just fun picnic outside with their families and friends. The trail is approximately one-half mile and follows the perimeter of Camp Catalpa along the east edge of Lake Reba (Davey Resource Group, 2009). “Its location is what makes Camp Catalpa such a unique and valuable urban forest resource. It is located close to the heart of Richmond near residential, recreational and commercial land uses along State Route 52” (Camp Catalpa, 2017). Most recently, the City of Richmond Parks and Recreation Department has removed the former playground and replaced it with an authentic wooden playground for the children to utilize the park. Camp Catalpa is clearly a beautiful hidden gem in Richmond Kentucky that the community has been behind since 1931. As the community has grown and changed, Camp Catalpa has also grown and improved to better meet the needs of the community.

A similar project to the construction of the lovely Camp Catalpa, would be rails to trails. In Clairsville, Ohio an old, abandoned rail road tunnel was turned into a trail. Ohio proposed building a trail on the abandoned Wheeling and Lake Erie right-of-way that runs through the 500-foot National Road Tunnel. Initially many of the residents had very negative thoughts about this proposal. The residents thought that this new trail would bring in crime to the area, murders and rapes, to name a few. Much discussion was spent around the possibility for the revitalization of this old rail road to a trail. The community proposed the idea of having twenty-four hour lighting available to help combat some of the negative ideas that were thought to come with the trail after the opening of the new park. "The community had a broad vision to create a linear park that would be the centerpiece of the community, a place where neighbors could meet and chat and people could bike or skate in safety" (Camp Catalpa, 2017). The Clairsville Rotary Club helped fund a beautiful staircase in the tunnel that overlooked the area. Many visitors enjoy this part of the tunnel. Even with the concerns of the community, once the tunnel opened in June of 1998, it became the pride of the community. The community really came together and stood behind this project and it is loved by many community members. Since the revitalization of the tunnel, there has not been a rise in crime, which makes the residents of the area very happy. The residents get to keep their safe community as well as enjoy a beautiful reinvigorated tunnel to a trail. Women have reported that they feel very safe when walking or running on the trail, which is a huge win. The only reported issues at this time with the tunnel is drainage issues. This issue was not one of the original fears of those that were opposed to turning a tunnel into a trail.

In a Kentucky Transportation Research Report, sixteen lines are looked at and are proposed as possible places to reinvigorate a former rail road to a new trail for patrons to use. Some are sites that have been discussed before, and others are brand new to being brought to the table. In 1986 the national organization, Rails to Trails Conservatory was formed to help those interested turn abandoned railroads into useful trails. In 1994 the Kentucky organization was formed by citizens from the following counties: Bluegrass, Lake Cumberland, Morehead, Muhlenberg County and Wilmore. This group was led by volunteers that wanted to make a difference (Eakean & Hart, 2001). "The results of this study will help existing rails to trails organizations, such as Kentucky Rails to Trails Council, expand their effort into new areas, identify new lines with trail potential, and assist local community trail initiatives with projects. Local groups, elected officials or interested individuals will also find the report useful in identifying abandoned rail resources in their area." 6 These lines were chosen based on several factors, including: contiguity, a right of way that is intact and not destroyed by natural or built causes, presence of railroad artifacts such as depots, tunnels or bridges, access to natural areas or parks, access to population, and connection between amenities and communities. The unaccounted factors that often determine the feasibility of trail projects are public support, funding, and the ability to acquire the right of way for trail use" (Eaken & Hart, 2001). Most of these railroads were constructed in mid to late nineteenth century. Some of the railroads had been abandoned as long as the early nineteenth century while others had been operating until the mid-nineteen eighties. A very small section that consists of 2.5 miles is included in this proposal. It is in Lexington: New Circle Road to I75 to North Elkhorn Creek in Fayette County. According to the Lexington Fayette Urban County Government site, this is a proposed project for the city and it is known as Town Branch Trail. This project is proposed in six phases. It will be a trail for walkers, runners and bikers and will connect downtown Lexington with

Masterson Station Park and the distillery area. “Town Branch Trail seeks to transform neglected or underutilized urban areas along our historic creek into a landscaped trail that will serve among other things: recreation, commuting, the environment, tourism and business, (Robinson, 2017).” This trail would be a great addition to Lexington exciting Legacy Trail. Lexington is striving to be a well-known commuting community and the Town Branch Trail will help them achieve this goal.

Even though rails to trails is not an exact replica of what occurred at Camp Catalpa, it does have similarities. In both situations, the community initially had a large area of land. From that, the communities where the land was located came together and came up with a plan on what to do with the land. The community came together and came up with a great project that would utilize the land that they already had and came up with ideas that would be cost effective, safe for the area, appealing to the community and to additionally appeal to those that might come from surrounding areas to visit the new trails, amenities and other additions that were added to any of the parks. In all cases, the communities expressed initial concern to what the proposal was but once the project was completed, the community came together and really enjoyed and utilized the areas that had been reinvigorated.

## **Methodology**

The researchers created a thirteen-question self-administered survey with the assistance of the Director of Richmond Parks and Recreation. When the researchers were onsite, they would approach park visitors and introduce themselves as a researcher from Eastern Kentucky University and state they were assisting the City of Richmond Parks and Recreation Department with a survey to provide more information for the overall management of Camp Catalpa. The patrons were informed that the survey should take less than five minutes. The patrons were also informed that if they participated that they would get a free pass for miniature golf at Adventure Falls at Lake Reba. If the patron provided consent and agreed to participate, they were handed a clipboard with the survey on it with a pen. The researcher provided ample room and privacy to complete the survey, but was close enough to answer any questions the patron might have. Upon completion of the survey, the patron was thanked for their time and was given their free pass for miniature golf at Adventure Falls and Lake Reba.

## **Analysis and Results**

A total of forty-seven participants were asked to participate in the study, forty-two of them agreed to do so. The mean age of visitors for survey at Camp Catalpa is 41.56 years of age, 21 were female, 19 were male, 1 participant chose other sex, and 1 did not respond. The distance traveled to Camp Catalpa (Table 1) for the visitation varied, with most people driving 3 to 5 miles or 1 to 2 miles. The survey also showed 40 people came by car, truck or van, one person came by bicycle and one person noted other. The participants on site were next asked how long they intended to visit Camp Catalpa on their visit (Table 2). One to two hours was the largest response (35.71%), followed by 2-3 hours (23.81%) and 30minutes to 1 hours (21.43%). Visitors also noted their main activity while visiting Camp Catalpa (Table 3). Nine participants were there to walk and nine marked disc golf. Five noted they were there for picnic, two for the playground and one was there

to go fishing. However, 16 respondents marked other, perhaps there for an activity that was not listed as an option on the survey.

*Table 1. Travel Distance to Camp Catalpa*

<b>Distance</b>	<b>%</b>	<b>Count</b>
1-2 miles	21.43%	9
3-5miles	30.95%	13
6-9 miles	14.29%	6
10-14 miles	11.90%	5
15-19 miles	2.38%	1
20-29 miles	7.14%	3
30+ miles	11.90%	5
I'm not sure?	0.00%	0
<b>Total</b>	<b>100%</b>	<b>42</b>

*Table 2. Time Spent and Season Visited at Camp Catalpa*

<b>Time Spent</b>	<b>%</b>	<b>Count</b>	<b>Season</b>	<b>%</b>	<b>Count</b>
Up to 15 minutes	0.00%	0	Fall	38.54	37
15-30 minutes	7.14%	3	Summer	28.13	27
30 minutes - 1 hour	21.43%	9	Winter	7.29	7
1-2 hours	35.71%	15	Spring	26.04	25
2-3 hours	23.81%	10			
3-5 hours	4.76%	2			
5 or more hours	7.14%	3			
Not sure	0.00%	0			
<b>Total</b>	<b>100%</b>	<b>42</b>			

*Table 3. Purpose of Camp Catalpa Visit*

<b>Visit Purpose</b>	<b>%</b>	<b>Count</b>
Walking	20.00	9
Fishing	2.22	1
Running	0.00	0
Disc Golf	20.00	9
Playground	4.44	2
Picnic/BBQ	11.11	5
Historical Visit	0.00	0
Photography	0.00	0
Birdwatching	0.00	0
Hammocking	0.00	0
Other	42.22	16
<b>Total</b>	<b>100%</b>	<b>45</b>

Camp Catalpa visitors noted how often they came to Camp Catalpa, with eleven participants chose at least once a week (26.19%), nine participants chose that they had only been to Camp Catalpa once (21.43%), seven participants chose more than twice a week (16.67%), five participants chose at least once a month (11.90%), five participants chose once every two to three months (11.90%), three participants chose two to three times per year (7.14%), two participants chose less frequently (4.76%), zero participants (0%) chose that they have never visited Camp Catalpa.

When asked about how they heard of Camp Catalpa (Table 4), nineteen participants chose general knowledge (45.24%) followed by twelve participants choosing word of mouth (28.57%). To follow this, most visitors do not have a dog with them (85.71%), while 14.29% said they visited with their dog. The most popular times to visit Camp Catalpa is in the fall, followed by summer and spring (Table 2).

Visitors were asked to rate amenities and areas at Camp Catalpa on a 1 (needs much improvement) to 5 (exemplary condition) scale (Table 5). All of the items received a mean score between 3.51 and 4.23, indicating that most visitors agreed that the areas and amenities were in above average condition. The last question that was asked of patrons during the survey dealt with suggestions for Camp Catalpa (Table 6). Suggestions included more cooking and shelter areas, picnic tables, and ridding the area of dead trees/brush.

*Table 4. First Time Heard of Camp Catalpa*

Method	%	Count
General Knowledge	45.23	19
Word of Mouth	28.57	12
Social Media	11.9	5
Map	0	0
Local Recommendation	4.76	2
This Survey	0	0
Other	9.52	4
Total	100%	42

*Table 5. Amenity Assessment*

Amenity/Areas	Mean Score
Signage to Site	3.77
Shelter	4.11
Parking	4.2
Public Restrooms	3.51
Walking/Hiking Paths	4.23
Seating	3.58
Disc Golf Course	3.79
Information Board(s)	3.75
Playground	4.03
Grilling Area(s)	3.65

*Table 6. Respondent Camp Catalpa Suggestions*

Path signs to keep people from walking through an active game of Disc Golf.
Picnic Tables for sitting
Mountain Biking
Basketball courts
Picnic Tables
Dog Walk
More picnic Tables
Restrooms
Cut out some of the dead trees, more grills, better bathroom
More grills, more picnic tables
Better signs
More shelters, handicap accessible
More shelter areas
More cooking areas
Basketball

**Discussion**

Some potential limitations that came up during this survey would be, but are not limited to; only fall season visitors were surveyed, the restrooms were closed for the last two data collections, many of the patrons only participated or utilized one or two activities that are offered and those patrons may not fully be aware of what is offered at Camp Catalpa.

Camp Catalpa is a beautiful park that backs up to Lake Reba and is mainly visited by residents of the local community. The researchers recommended sustaining or improved the disc golf and walking/hiking trails to ensure that those activities stay enjoyable for patrons. Specifically, create or improve signage for the Disc Golf Course to better educate others about the game of Disc Golf

and improve safety of users and nonusers of the course. The improvements to the walking paths and the playground are the two areas that patrons mentioned most and patrons suggest that further improvement related to the public restrooms, signage and the information boards. It is recommended to improve directional signage to the park as well as signage around the park to better educate the visitors regarding the park opportunities and interpretation along the trail and in common areas. More restrooms and additional picnic tables were also noted as needs. If Camp Catalpa is visited during a busy time, all of the picnic tables are often full and others are waiting to use them are leave to find another area. Knowledge of Camp Catalpa may also be an issues if more use is preferred, as most of the visitors have known about the area for a while. Increased social media presence and marking would be an optimal first recommendation. Social media is a great way to market and promote a place or program that can be fairly inexpensive.

The more people that know about Camp Catalpa, the more community members that can benefit from the resource. As the needs of the community grow and change, Camp Catalpa can change to meet the needs and offer a place of fun and respite. Further research during all seasons could benefit management to have a better understanding of all visitors to the area.



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**(Peer Reviewed Article)****The Effects of Multiuse Trails on Physical Activity and Health in a Kentucky Trail Town: A Pilot Study**

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**Abstract**

The purpose of this pilot study was twofold: 1) to collect trail user frequency, duration, and mode of travel on two separate segments of a multi-use trail in a rural Kentucky Trail Town, 2) to estimate the health impact of trail on personal or community health. In addition, this study served to establish baseline measures prior to the completion of build infrastructure of another multiuse trail, which will connect two trail segments. Intercept surveys, hand counts, and infrared sensors were used to estimate the number and type of users. In July of 2017, data was collected for 12 hours on two weekdays. Intercept surveys were analyzed in tandem with hand counts to develop an estimate of the total number of annual visits. Weather data from previous research was used to create relative ratios of use for the year. The results indicate that the approximate number of annual users for the combined trails was 7,784. The health impact model used the relationship between exposures to trail use, versus no use, to estimate all-cause mortality using the model established by Götschi & Loh (2017) and the World Health Organizations Health Economic Assessment Tool (World Health Organization, 2010b). The use of the multiuse trails corresponded to an increase of exercise by residents to 57 minutes five days per week. Future data will provide annual usage, frequency and duration as the multi-use path is connected and therefore lengthened.

**Key words:** Trail use, Physical activity, Health impact, Built environment

**Introduction**

Physical inactivity is a significant global health issue. The health benefits of moderate-to-vigorous physical activity are documented in the form of published guidelines in the USA, Canada, UK and the World Health Organization (WHO) providing the public with targets for the amount and intensity of physical activity need for good health (Piersy, et al., 2018; Tremblay, et al., 2011; WHO, 2010a). Global public health efforts are warranted based on the prevalence of adults (23%) worldwide who are insufficiently active at levels recommended by the WHO. The impact is substantial with 6%-19% of all death attributed to insufficient physical activity and the estimated health-care system costs (Ding, et al., 2016).

In the United States approximately 80% of US adults and adolescents are insufficiently active (Piersy, et al., 2018). Only 1 in 5 adults meets the 2018 Physical Activity Guidelines of 30 minutes of moderate-vigorous physical activity per day, five days per week. Despite the known health benefits, 4 of 5 Americans do not engage in physical activity. Only twenty-five percent of adults report engaging in recommended levels of physical activity (either 30 minutes of moderate-

intensity activity 5 or more days per week or 20 minutes of vigorous-intensity physical activity 3 or more days per week). In addition, 29% percent report no leisure-time regular physical activity, and only 27% of students (grades 9 to 12) engage in recommended amounts of moderate-intensity physical activity (Task Force on Community Preventive Services, 2002).

Despite national public health initiatives to reduce sedentary behavior, race disparities in physical activity persist as well, after accounting for various individual-level factors, such as income and education, among Blacks, Hispanics, women, older persons and residents of urban communities (Crespo, et al., 2000; Marshall, et al., 2007; Centers for Disease Control and Prevention (CDC) 2007). Another sedentary cluster of residents are in rural communities.

Rural residents make up 15% of the US population (US. Department of Agriculture Economic Research Services, 2015). Physical activity rates are disproportionately lower in rural areas, with rural residents least likely to meet physical activity recommendations compared to urban and suburban residents (Parks, et al., 2003). Further, physical activity is lowest in smaller rural communities (i.e., populations under 10,000 persons) (Fan, et al., 2014) and decreased physical activity rates among rural residents elicits a higher risk for cancer and other chronic diseases, as compared to urban/suburban residents (Crosby, et al., 2012; Anderson, 2015).

The Appalachian region has a greater rate of type II diabetes, coronary heart disease as well as all-cause mortality than national standards (CDC, 2018). The State of Kentucky, one of the 13 Appalachian states has a greater rate of physical inactivity than the national average. According to the CDC (2018) estimates, approximately 28% of residents of Madison County are completely physically inactive, with State of Kentucky at 29%, while the national average was 25% (CDC, 2018).

The emphasis on the built environment, as an ecological strategy, has led to an increased interest in providing public spaces that promote physical activity (Clark, et al., 2014). These environmental changes include the creation and presence of community trails associated with increased level of physical activity in some subgroups, although with mixed results (Clark, et al., 2014). Research provides evidence that trails are a preferred activity (Task Force on Community Preventive Services, 2002) and persons who use trails for physical activity are more likely to meet the national physical activity recommendations than those who rarely or never use the trails for physical activity. Most research directed at the built environment and recreational opportunities for physical activity has focused in urban areas with little attention to rural settings. (Frost, et al., 2010; Meyer et al., 2016). Few published studies have used observational data or objective measures of trail usage (Clark, et al., 2014; Mingo, et al., 2017). The author of this study, the Berea Trail Town Committee and the city of Berea choose to address these delinquencies in the study design.

The pilot study responds to a unique opportunity to capture a before and after analysis of the impact of a critical link of two multiuse trails in a Kentucky Trail Town. Berea Kentucky has a population of 15,000 and is located approximately 50 miles from Lexington Kentucky and 120 miles south of Cincinnati Ohio. The rural city is home to Berea College and became a Kentucky Trail Town in December of 2015.

### **Health Benefits of Trails**

Research has been examining the health benefits of different types of trails over the last decade (Gomez & Hill, 2016). Research suggests that trails can play a key role in public health. The built environment in which a person lives, and works is thought to have a strong influence on his or her level of physical activity. In a quasi-experimental research design with multiple control neighborhoods conducted between 2005 and 2007 an urban greenway/trail was retrofitted permitting 2-hour counts of directly observed physical activity in the neighborhood, at the school level and active transport to school. The pre- and post-intervention changes between experimental and control neighborhoods were significantly different for total physical activity ( $p = 0.001$ ); walking ( $p = 0.001$ ); and cycling ( $p = 0.038$ ) (Fitzhugh, et al., 2010).

Individuals living closer to green spaces were 44% more likely to meet the national physical activity guidelines and were physically active for longer time periods than those who were indoors, by an average of 30 minutes more per week (Starnes, et al., 2011). Gezon et al reported findings in Carrollton, Georgia, based on a four-person student team of researchers from the University of West Georgia who distributed surveys at four separate, high-traffic locations on the GreenBelt (2016). Results from 269 on site surveys, and 14 interviews with trail users indicated three positive benefits. Multi-use trail benefits were: (1) The trail made it easier for users to find *time* to exercise; (2) trail users reported being in better health than they were two years prior and credited the GreenBelt as aid the transition, and (3) the trail increased the enjoyment of moderate/vigorous physical activity as a place to socialize. However, a common misconception exists that the presence of the multiuse trails would increase physical activity and health, and secondarily increase socializing. Socializing was a predominant factor in the improvement of perceived health (Gezon, et al., 2016).

### **Physical Activity Use on Trails**

Researchers have studied 366 adults aged 18 years and older living within 2 miles of a multiuse trail in central North Carolina before trail construction began and approximately 2 months after completion of construction. Outcome measures included time spent in leisure activity, leisure activity near home, walking, bicycling, moderate activity, vigorous activity, and transportation activity. Twenty-three percent of users increased levels of physical activity after local trails were connected (Evenson, et al., 2004).

After a systematic review of nineteen eligible articles with built environments infrastructures, Stappers et al., (2018) reached two conclusions. First, on-and off-road bicycling and/or walking trails resulted in inconsistent effects on overall physical activity and walking and predominately positive effects on bicycling. Second, higher-quality, in-depth research is recommended to consider the built environment infrastructures. This research intends to address the research gap.

### **Kentucky Trail Towns**

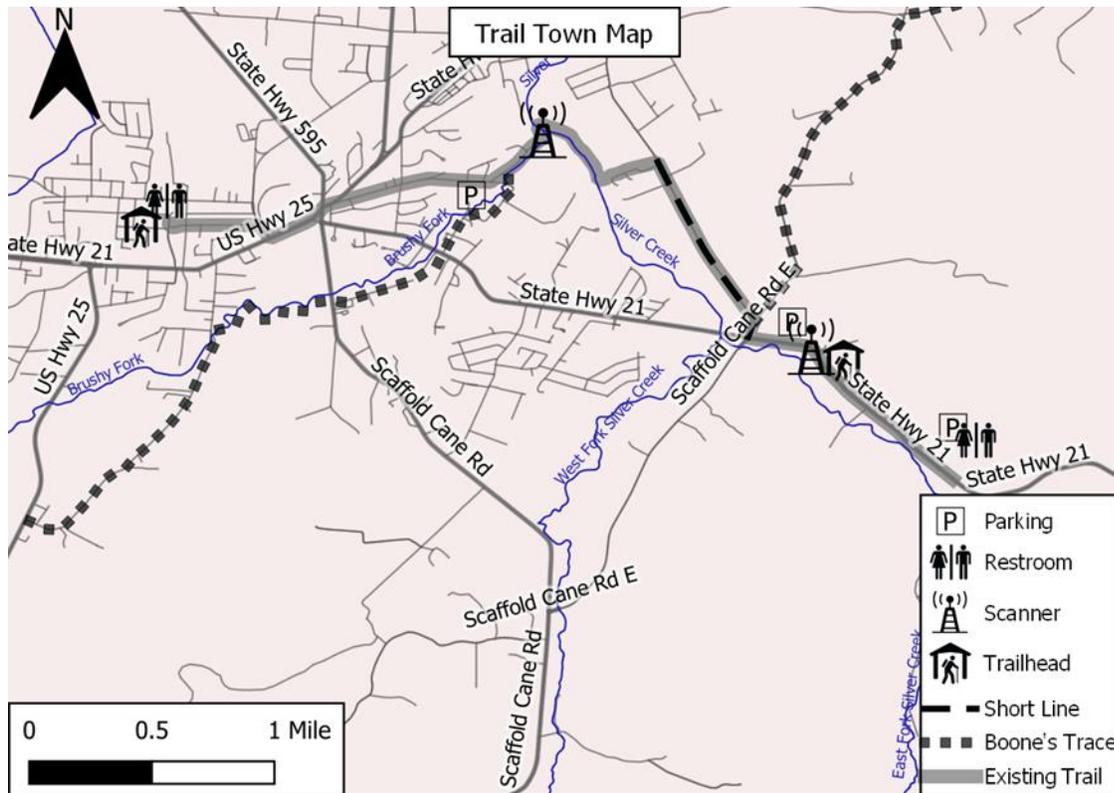
In 2012, Kentucky Department of Tourism created the Kentucky Trail Town certification program designed to help connect communities to trail systems and develop communities as tourist destinations. The certification process includes developing action plans that guide travelers

to trails, food, lodging, campgrounds, museums, entertainment and other services. The application decision to apply for certification was stimulated by the recognition of the value experienced from intercept surveys conducted with touring cyclists along the TransAmerican bikeway (USBR 76) and community partners and advocates of the historical Daniel Boone Trace Trail. The certification process included providing supportive documents: 1) listing the Task Force committee memberships and evidence of meetings, 2) maps of proposed trails and trail heads, 3) trail signage and maintenance plans 4) evidence of meetings with the Kentucky Department of Agriculture, Heritage Council, Arts Council, local merchants, youth engagement plan, and 5) the executing of a trial run and audit by experienced adventure tourists from outside communities. The Berea Trail Town Committee began the application process in the summer of 2015 and were notified of certification in December 2015. Three levels of cycling trails: beginner, intermediate and advanced were mapped for cyclists, hikers, bike-hiker and water trails.

Approximately the same time as the Kentucky Trail Town certification process began, the city of Berea started expanding its multiuse trail system from the center of town out 1.5 miles to the Artisan Center near interstate I-75. Earlier in 2011, another paved multi-use, one-mile segment from the center of the city was completed over segments of the Daniel Boone Trace Trail. This trail starts at the municipal building, runs along Brushy Fork Creek, and crosses over where Silver Creek and Brushy Fork intersect at the Stephenson Bridge (SB). This segment is called the John B. Stevenson trail. The Stevenson bridge intersection captures part of the original Daniel Boone Trace Trail and its history as Daniel Boone and his axe men, walked along this path in 1775 where the two creeks meet. The John B. Stevenson trail ends near the north end of the Short Line Pike road.

One year later, in 2012, a second paved 0.87-mile multi-use segment off the Daniel Boone Trace Trail was completed and extended from Blue Lick Road past the Berea Arena Theater ending at the Pinnacles at Indian Fort Mountain. The second segment of interest for this study begins at Berea Arena Theater (AT) and extends to the Pinnacles at Indian Fort Mountain parking lot. This segment is called the Indian Fort Mountain Trail. Thus, users can walk/run/bike from Arena Theater to the Pinnacle parking lot trailhead up and around or vice versa along the Indian Fort Mountain Trail. This bike/hike/walk would include the Indian Fort paved portion and the dirt segment of at the West Pinnacles. By 2017, there is a one-mile segment of the Daniel Boone Trace Trail planned but not constructed between Stephenson Bridge (SB) and Arena Theater (AT) multiuse segments (Figure 1). Once completed, residents/tourist will be able to bike, walk or run from the center of town out 3.1 miles to the Indian Fort Mountain Trail at the Pinnacles, and return. This multiuse path is a non-motorized trail. Thus, increasing the safety of the corridor as well as the length possible for physical activity for bikers, walker and runners.

*Figure 1. Trail Map of Berea Trail Town. Stevenson Bridge and Arena Theater trails are indicated by the "Scanner" on the Existing Trails.*



Two segments of the multiuse trail are the focus of this study. The first segment is the John B. Stevenson segment (1.1 miles), and the second is the Indian Fort Trail segment (.85 miles). The land use and demographic characteristics differ between the segments. Beginning at the municipal building and extending along the John B. Stevenson segment, the trail passes by the two historical creeks mentioned previously at Stevenson Bridge (SB). The Indian Fort Trail segment is further from the city and has a parking lot near the beginning of the trailhead at Berea Arena Theater (AT). Users typically drive to AT parking lot, park and use the Indian Fort Mountain Trail in two different ways: 1) to access the West Pinnacles of Indian Fort Mountain which is a dirt trail, or 2) use the paved path for exercise (walk, run or cycle) to the Indian Fort Mountain Trail at the Pinnacles parking lot; and then turn around. Both the SB and AT multiuse trails are paved 10 feet wide paths that are closed to all types of motorized vehicles.

Previous research has examined trail users and physical benefits (Price et al, 2011) or future impact of multiuse trails in rural United States and the Appalachian region (Cook et al., 2014). To the authors' knowledge none have been completed in Kentucky. The objectives of the study were two-fold: 1) to collect trail user frequency, duration, and travel mode in a rural Kentucky Trail Town, 2) to estimate the health impact of the trails. In addition, this study served to establish baseline measures prior to the completion of an addition multiuse trail that will connect the two segments.

## Method

### *Data Collection*

In July of 2017, trail users were interviewed and surveyed along two trail segments. The first trail segment is the 1) John B. Stevenson trail and the second trail is the Indian Fort Trail. The surveyors, counters, and scanners were located at the bridge along Stevenson trail, identified as SB and at the Arena theater (AT) point on the Indian Fort trail. Data was collected for 12 hours, from 6:00 am - 6:00 pm on the two separate trail segments, on July 26 and 27th. The survey gathered information on users' trip characteristics and demographics. Manual hand counts determined trail usage as well. In addition, infrared sensors counted the number of users during the study period July – December 2017. Origin, destination, and round-trip data from surveys were analyzed in tandem with the hand counts to develop an estimate of the number of annual visits. Weather data (precipitation and temperature) were used to create relative ratios of use for each day of the year. Then, the relative ratios of use were used for the calculation of the health impact data (Götschi and Loh, 2016). A combination of Berea College and Eastern Kentucky University faculty and students collected the data. The Institutional Review Board for human subjects at Eastern Kentucky University approved the study on May 27, 2017.

### *Intercept Survey*

The intercept survey was adopted from previous research that examined the health impact of 14 urban-shared use paths (Götschi and Loh, 2017). In addition, the American Tobacco Trail survey and methodology was used to capture the behavioral effects of connecting two segments replicating the 'rails to trails conversion (Cook, et al., 2016). Two questions regarding physical activity participation were added to the American Tobacco Trail survey. First, how many days of the week do you participate in 30 minutes or more of moderate vigorous physical activity and, second, if you were not able to access the trail, how likely were you to participate in another form of physical activity (Götschi and Loh, 2016).

### *Annual Users*

The average number of trail users over the two-day period was used to estimate the number of annual users. First, the author added together the average total number of trail users based on manual hand counts for both John B. Stevenson and the Indian Fort segments. Second, the mean daily traffic was estimated based on a weighted algorithm that included adjustment parameters for months, temperature, and precipitation (Yang & Davis, 2002). This model has been used to reliably estimate mean daily traffic with two-day traffic samples taken between May and October, on collection days between Tuesday and Thursday (Yang & Davis, 2002).

### *Health Impact Calculation*

The Health Economic Assessment Tool was used to calculate health impact of trail use in terms of premature deaths avoided and prevented disease cases. This HEAT model was based on previous research (Götschi and Loh, 2017). Health impact calculations use established relationships between an exposure and an outcome from epidemiologic research (i.e. relative risks) to quantify impacts of changes in exposure in a specific population. In our case, the population was trail users, the exposure was trail use (or physical activity), and outcomes were all-cause mortality. The

resulting difference is the risk reduction attributable to trail use. The HEAT calculates health benefits from long-term trail use per 100,000 trail users, over a ten-year period based on the number of annual users. The resulting risk reductions due to regular trail use were then applied to the corresponding baseline disease and mortality risks.

## Results

One hundred and twenty-three trail users agreed to participate the on-site surveys in two separate trail segments. Ninety-five trail users were interviewed on the Stevenson Bridge segment located closer to the middle of the city of Berea. Whereas, 28 trail users were interviewed at the Arena Theater location 2.1 miles from the city. Please see Trail Map (Figure 1). Sixty-four percent were female, 93% were white, and the age range of users was 18-85 years. Approximately 30 (23%) were approached and declined participation. This may have been due to being on a bike, running or not interested in the study. When asked why they were using the trail, all (100%) of the users reported they were using the trail for exercise.

### *Physical Activity Type*

(a) John B Stevenson trail segment: Of the total trail users surveyed on the Stevenson Bridge segment, 64% were walkers, 11% of the users were runners and 33% cyclists. Table 1 show the demographic characteristics of trail users by physical activity type and age. However, the Mann-Whitney U test failed to show a significant difference in mode of trail use between gender ( $U = 538, p = 0.110$ ). Approximately 52% of people traveled to John B. Stevenson trailhead by automobile before heading to the bridge. The Mann-Whitney U test showed a statistically significant difference in mode of access by gender ( $U = 367, p < 0.001$ ). Specifically, a greater number of women ( $n = 45$ ) drove to the trailhead than men ( $n = 12$ ). Table 2 displays mode of access.

*Table 1. Number of trail users and mode of use for John B. Stevenson (SB) trail segment*

Variable	Walking (n = 7)	Running (n = 13)	Cycling (n = 11)	Mann-Whitney U test	<i>p</i>
Gender				538.0	0.11
Female	49 (80.3%)	7 (11.5%)	5 (8.2%)		
Male	22 (64.7%)	6 (17.6%)	6 (17.6%)		
Age group (include both gender)					
18-35	5				
36-55	33	11	1		
56 – over	33	2	10		

*Table 2. Mode of access by gender for the John B. Stevenson (SB) trail segment*

Variable	Auto (n = 71)	Bike (n = 13)	Foot (n = 11)	Mann-Whitney U test	<i>p</i>
Gender				367.0	<. 001*
Female	45 (73.8%)	5 (8.2%)	11 (18.0%)		

Male	12 (35.3%)	6 (17.6%)	16 (47.1%)		
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\* $p < .05$  mode of access is significantly different across gender.

(b) Indian Fort segment: The Indian Fort trail segment is located two miles away from Berea, thus 90% of users traveled by automobile to access it (Table 3). The access point is the Berea Arena Theater (AT) parking lots. The Mann-Whitney U test failed to show a significant difference in mode of trail access between genders ( $U = 38, p = 0.779$ ). Of 28 total trail users, 71% were walkers, 18% were runners and 11% cyclists. Table 4 displays the physical activity type and age of trail users. The Mann-Whitney U test failed to show a significant difference in mode of trail use between gender ( $U = 42, p = 1.00$ ). Specifically, most of the walkers were women, with all runners and cyclists being male on this trail. Lastly, all cyclists were male and over the age of 56 years.

Table 3. Mode of access by gender for Arena Theater segment

Variable	Auto (n = 19)	Bike (n = 0)	Foot (n = 2)	Mann-Whitney U test	p
Gender				.869	0.78
Female	14		1		
Male	5		1		

Table 4. Number of trail users and mode of use for Arena Theater (AT) segment

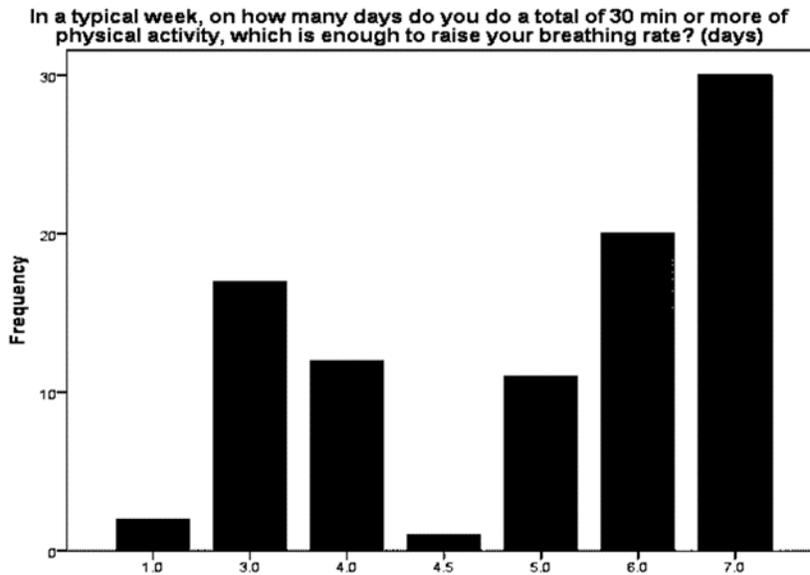
Variable	Walking (n = 20)	Running (n = 5)	Cycling (n = 3)	Mann-Whitney U test (Gender and Mode)	P
Gender				42.0	1.00
Female	14 (50.0%)				
Male	6 (21.4%)	4 (14%)	3 (10%)		
Age group (Males & Females)					
18-35	4 (14%)				
36-55	8 (29%)	5 (18%)			
56 – over	8 (29%)		3 (10%)		

### Physical Activity and Frequency of Trail Use

To examine physical activity and health impact data both trail segments were combined. Table 5 displays the time on the trail averaged 48.9 minutes, 3.9 miles, with residential walkers, runners and cyclists adding 11 minutes of physical activity time to access the trail. The total physical activity time was over 59 minutes. In addition to replicate the urban trail use, Gotchi et al., (2015) recommended obtaining two additional data points. Participants were asked, how many times they accessed the trail in the last two weeks, and the percent of exercise met by using the trail.

Over 53% reported engaging in 30 minutes or more of moderate-vigorous physical activity six to seven days per week. See Figure 2. The frequent trail use led users reporting to be in very good (48%) to excellent health (22%). See Figure 3. This information allowed us to see on average how many people were getting their recommended amounts of physical activity in comparison to the Surgeon General's report which sets the baseline of 30 minutes five days a week (CDC, 2010).

Figure 2. Number of days of participants reported 30 minutes or more of physical activity ( $n = 95$ ).



### Health Impact

Health impact calculations use established relationships between physical activities and outcomes from epidemiologic research (i.e. relative risks) to quantify impacts of changes in exposure in a specific population (Gotschi & Loh, 2016). In our case, the population is trail users, exposure is trail use (physical activity), and outcomes are various disease incidents, and all-cause mortality. Health impact calculations use frequency, duration, and distance of physical activity. This is then applied to disease or mortality risks of a population. The difference between no trail use, and trail use (reduced risk), applied to a specific population (i.e. number of people) produces what is referred to as health impacts. For more detailed discussion of health impact calculations of active transport (see Gotschi et al., 2015a).

An average of 148 trail users per day on both trail segments was used to estimate the annual trail use. For our trail, we used the HEAT tool (CDC, 2016C; US Department of Transportation, 2015; World Health Organization, 2010), and the results of physical activity from the study. For our calculation, our walkers, total physical activity time of 59 minutes, five days per week, and 3.9 miles was applied to the HEAT tool. These models require defining the value of statistical life in United States as \$9.4 million over a ten-year period. Using HEAT tool, the annual physical activity on our trail prevented 13 disease cases, and saved \$1,085,000 in saved treatment costs and prevented 71 premature deaths.

### Discussion

The purpose of this pilot study was twofold: First, to determine the frequency, duration and mode of activity for two separate multi-use trails in Berea Kentucky, second to compute the health

impacts of the two trail segments. One hundred percent of trail use was for physical activity and exercise. Over fifty percent of the trail users were walkers, who were exceeding a total of 58 minutes of physical activity per use. Thirty percent reported being active 30 minutes or more seven days per week, with twenty percent reported six days per week. Trail users were active longer and more frequently than the Surgeon General guidelines for physical activity.

This study demonstrated differences in access and mode by gender. More women drove to the residential trail than men. In contrast, older men ran and cycled to the trail more than women. It was reported that during the summer, 59% of the trail users frequent the trail more than three times per week, and 17% accessed the trail 2-3 times per week. Fifty-eight percent of participants' exercise was met by using the trail. In the winter, 17% frequent the trail more than 3 times per week, while 19% of users access the trail 2-3 times per week. Thus, this relatively short multiuse trail was successful in providing opportunities for frequent use to increase and maintain physical activity levels.

A secondary goal of the study was to estimate the health impacts of trail use associated with chronic diseases, mortality, and treatment costs (Gotschi et. al, 2016). In this pilot study, annual trail users were participating in an average of 59 minutes of exercise five days per week. This amount of physical activity corresponds the prevention of 71 premature deaths per year (Gotschi et. al, 2016).

The pilot study demonstrated the trail users exceeded the duration and met the frequency standard of the 2018 Physical Activity Guidelines. In addition, 30 percent reported being active 30 minutes or more seven days per week, with twenty percent reported six days per week. Unexpectedly, rural trail users were active longer and more frequently than the Surgeon General guidelines for physical activity.

In support of Gezon et al (2016) the multi-use trail provided rural residents' accessibility and extended the frequency and duration of time spent on the trail promoting healthy physical activity. Our research aligns with Stappers et al. (2018) findings and distinguishes differences in gender for walkers and bicyclers. Specifically, the majority of women were walkers, whereas males were runners and cyclists. Furthermore, in support of Gomez and Hill (2016) and Stappers et al. (2018) this pilot study reveals the contribution of higher-quality and in-depth research in support of the community-based build environments.

There are limitations to the study. Data collection occurred only once per year, during the summer. Another limitation was that the study was approved for individuals over 18 years of age. Youth who were cycling, running or walking on the trails were excluded. Lastly, a small number of participants declined interviews. However, the reliable and valid survey used lends strength to the pilot study. In addition, this cross-sectional study on a Berea Kentucky trail may have limited generalizability to other communities.

### **Conclusions and Implications**

In conclusion, this study highlights the success of the community-based built environment in successfully providing opportunities for trail users to increase and maintain levels of physical

activity. This work is both timely and relevant as more communities seek to address systemic public health challenges and utilize multiuse trails as tourism and economic assets and for health impacts. Increasing bicycle and pedestrian use of trails is a strategy increasingly of interest to community planners, tourism commissions and economic developers as they seek to address quality of life issues for rural community members. Users of the trail exceeded the Surgeon General's physical activity recommendation for health. Ninety percent or more users of the trails stated they were in good (or excellent) health. This compares to only 57% of Kentuckians reporting good to excellent health (Center for Disease Control, 2010). Lastly, this study served to establish baseline measures prior to the completion of an addition trail that will connect the two segments.



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**(Peer Review Article)****Analyses of National Football League 2011-17 Team Values: Stadium Renovation & Construction Trumps Winning***Zachary Muetzel, University of Dayton**Peter Titlebaum, University of Dayton**Ronald Dick, Duquesne University**Steve Shih-Chia Chen, Morehead State University***Abstract**

The National Football League (NFL) is the most valuable league out of America's "Big Four" professional sports. This paper examined the valuation of the NFL teams during the six-year span from 2011-2017. The data of team's value and other various information such as average game attendance, winning percentage, and record of stadium renovation and construction were retrieved from various webpages sponsored by Forbes and ESPN. According to the results of analyses, we witnessed the actualization of the Rule of 72 that demonstrated the NFL as a fast-growing vibrant industry. The authors further concluded that involvement in stadium renovation and construction is a more important financial contributor to a team's value than winning. However, we rejected this common practice in the NFL industry, because the teams are reaping the benefits at the expense of the taxpayers.

*Key Words:* The Rule of 72, team value, stadium renovation and construction

**A Brief Introduction to the National Football League**

The National Football League (NFL) is the highest level of American football and the most valuable professional sports league in the United States. It comprises 32 franchises that compete against each other annually to win the Super Bowl, the world's biggest annual sporting event. Founded in 1920, the NFL has become the most successful and profitable professional sport league in our country by using an aggressive revenue driven business model. Elements of its business model include extensively applying revenue sharing practices, creating excellent competitions and popular franchises across the board, and offering national distribution of games via various media platforms (National Football League, 2017). The NFL is the industry leader on a wide range of fronts. No wonder the NFL is recognized by the Business Week magazine as "one of the America's best-run businesses" (National Football League, 2017).

Although the NFL may not be a typical business organization, it strives for the same end goal as many other for-profit companies: to maximize the organization's profits. This concept applies to each of the 32 franchises that make up the NFL. Each franchise must determine the best ways to increase its value at a higher rate than other teams, which results in greater profits and success on the playing field.

**Principles and Examples of Valuation for All Sport Franchises**

According to numerous sport textbooks, profit maximization is often recognized as the primary goal and principle which guides the organization's behavior and actions (Eschenfelder & Li, 2007; Fort, 2005; Leeds, von Allmen, & Matheson, 2018). During the period of time between 2012 and 2017, NFL franchises demonstrated an increase in value ranging from 200% to 300% (Ozanian, 2018). The "Rule of 72" is a commonly used financial principle to illustrate how long it would take to double a franchise's investment (Corporate Finance Institute, 2015; Study.com, 2018). Industry typically grows about 2-3% in a good year as the same rate as the economy, and 7-8% annual growth is considered higher than average. Doubling the franchise value in six years implies a minimum of 12% of annual growth rate, which symbolizes an impressive growth. However, within a vibrant industry, if a competing organization is able to triple in its value during a short time span, it is logical to assume there are opportunities missed by other organizations. The amazing fact is that all NFL franchises were able to increase their value collectively in the specified six-year period.

Before the 1980s, the idea of franchises among professional sports leagues doubling in value every six years is an unrealistic expectation. Taking the purchase of the most valuable Major League Baseball (MLB) franchise, the New York Yankees, as an example, Columbia Broadcasting Station (CBS) purchased it for \$10.4 million in 1964. In 1972, George Steinbrenner purchased the Yankees for \$12 million (Durso, 1973). So in that eight-year timeframe, the Yankees did NOT double in value and had less than \$2 million increase in its value. Therefore, the phenomenon of the Rule of 72 was not observed in this case. However, this phenomenon becomes more achievable depend on which six-year timeframe is examined after the 1980s. For example, Leonard Tose sold the Philadelphia Eagles for \$65 million to Norman Braman in 1985. Braman then sold the Eagles to current owner Jeffrey Lurie for \$194 million in 1994, with a price nearly tripling the team's value (Fink, 2017). Within nine years, Eagles' franchise value had risen three times. In reality, it is hard to imagine how many fans a franchise needs to grow in order to increase its value two-fold in a six-year period. Thanks to the dramatic rate of growth in players' salaries, television contracts, and cost of stadium construction, the team owners were able to witness an incredibly fast-paced increase of their franchise value in the past 20 years (Eschenfelder, & Li, 2007; Fort, 2005; Leeds, von Allmen, & Matheson, 2018).

Different factors that influence the financial prosperity of a professional sport franchise in America include, but are not limited to, team classification, obtainment of new stadiums, team relocations, on-field performance, and market size (Alexander & Kern, 2004). In general, most of the franchises of the Big Four professional sports (NFL, MLB, National Basketball Association, and National Hockey Association) in America have a franchise value exceeding several hundred-million dollars (Brautigam, 2016; Investopedia, 2017). All NFL franchises' value exceeds one and a-half billion dollars (Investopedia, 2017; Statista, 2018). The total value of a franchise can be broken down in elements such as sport component, marketing aspect, stadium, and revenues from brand management (Brautigam, 2016). The sport component covers the cost of players' salaries, broadcasting deals, and operational costs (Leeds, von Allmen, & Matheson, 2018). The aspect of marketing refers to all the income from ticket sales, concession sales, and sponsorship deals. Brand management includes revenue from naming right deals and licensing merchandise sales (Shak and Lyberger, 2014).

Franchises with a rich tradition and history usually have a strong tie with the community and a strong fan base. In a case study focusing on the MLB franchises, Miller (2007) found that the age of a specific franchise does not correlate to success. However, a winning team has a positive impact on the franchise value, and an old facility tends to have a negative impact. MLB has seen a spike in team values with the recent sale of the Los Angeles Dodgers and the Miami Marlins (Miller, 2007). The Marlins have a relatively new stadium primarily paid for by local tax dollars (Miller, 2007). The price tag for the Dodgers could be even higher, if the team had a brand new stadium.

An important reason for the increase in value of some teams, as brought forth by Clapp and Hakes (2005), is the creation of new stadiums. A new venue creates a 'honeymoon' effect on the fans, thus increasing attendance. According to the IBIS World Report on the Sport Franchise Industry, ticket sales, merchandise, and concessions make up 41.7% of all revenue in the sports industry in the United States (Peters, 2017). All three of these revenue streams are driven by attendance at the games; therefore, the newly built stadiums have a distinct advantage in attracting fans. In general, the honeymoon effect would last for three to five years. When the novelty effect wears off, the attendance will drop back to the pre-construction level.

Another key factor that dictates the value of a franchise is the winning percentage on the field (Miller, 2007). A franchise must accomplish a better than average winning percentage (> 50%) in regular seasons and post-season to the benefit of extra incomes. We can logically assume that when a franchise is winning consistently, more fans and spectators will jump on the band wagon to cheer and support the team. Thus, its ticket revenues and other sales related revenue will also increase. When a franchise is not performing well, and its stadium has reached a certain age, it is not uncommon to see the owner pulling the trick of demanding a new stadium or threatening to leave for a new host city. If a franchise is granted relocation to a new host city, this means a new stadium is likely ready or to be built to welcome its arrival. Mercer's article (2014) confirmed that winning clearly has a positive impact on a team's franchise valuation, but its effect is limited based on market.

## **Methodology and Purpose of the Study**

### *Analyses of NFL Franchises' Value from 2011 to 2017*

The purpose of this investigation is to determine the most influential factors that increase the value of NFL teams. The authors hypothesized that the value of football franchises were associated with attendance, winning percentage, and length of the stadium being used. More specifically, the stadium construction and renovation would have a strong and direct impact on the franchise's added value. According to Alexander and Kern (2004), several factors determined the financial success of teams in 'Big Four' professional sports. This research adopted their concept by examining variables which specifically impact the value of NFL franchises. Recently, new reports have shown a slide of television ratings of NFL games (Carpenter, 2018; Stites, 2018). The attendance of the games also decreases from 2016-2017 (Stites, 2018). The authors wonder how NFL franchises continue to increase their value despite the attendance figures and TV rating are dropping. What are the primary reasons that cause us to witness the actualization of Rule of 72?

After retrieving the franchise values of all NFL teams during two different time periods (2011 and 2017), the authors further determine how winning, attendance, and condition/status of existing stadium related to the value of a sport franchise. The attendance results were found on each team's website and queried through ESPN.com, as well as local and regional news outlets. The data of franchise value were retrieved from Forbes.com using key terms such as "year" and "NFL team".

## Results

Figure 1 shows the values of each NFL franchise in billions of dollars. In 2011, the average franchise value of a NFL team was at \$1.025 billion dollars. This number had increased to \$2.522 billion dollars in 2017. On an average, all franchises reported a 248% gain in value within the six-year period, and even the least profitable franchises has a 200% increase in value. It is important to note that six of the 32 teams had an increase in value exceeding 300%. This means that the "Rule of 72" can be observed among all NFL franchises.

Figure 1. Team Values of All NFL Franchises in 2011 and 2017

Team	2011 Value	2017 Value	Added Value in 6 Years
Los Angeles Rams	0.775	3	387%
New England Patriots	1.14	3.7	325%
Oakland Raiders	0.761	2.38	313%
San Francisco 49ers	0.99	3.05	308%
Atlanta Falcons	0.814	2.475	304%
Minnesota Vikings	0.796	2.4	302%
Jacksonville Jaguars	0.725	2.075	286%
Chicago Bears	1.093	2.85	261%
Dallas Cowboys	1.85	4.8	259%
Miami Dolphins	1.012	2.575	254%
New York Giants	1.3	3.3	254%
Denver Broncos	1.046	2.6	249%
Los Angeles Chargers	0.92	2.275	247%
Seattle Seahawks	0.997	2.425	243%
Pittsburgh Steelers	1.018	2.45	241%
Arizona Cardinals	0.901	2.15	239%
Green Bay Packers	1.089	2.55	234%
Baltimore Ravens	1.088	2.5	230%
Houston Texans	1.22	2.8	230%
Philadelphia Eagles	1.164	2.65	228%
Carolina Panthers	1.02	2.3	225%
Indianapolis Colts	1.057	2.375	225%
New York Jets	1.23	2.75	224%
Washington Redskins	1.4	3.1	221%
Kansas City Chiefs	0.986	2.1	213%
Tennessee Titans	0.964	2.05	213%
New Orleans Saints	0.965	2	207%
Cincinnati Bengals	0.875	1.8	206%
Buffalo Bills	0.792	1.6	202%
Detroit Lions	0.844	1.7	201%
Tampa Bay Buccaneers	0.981	1.975	201%
Cleveland Browns	0.977	1.95	200%
<b>League Average</b>	<b>1.025</b>	<b>2.522</b>	<b>248%</b>

## Impact of Various Factors on NFL Franchises' Value

In the following sections, the authors further examined the franchise's total value and the added value within the six-year period by utilizing various independent variables, such as length of the stadium usage, winning percentage, and average game attendance to establish relationship or reflect group differences based on variables.

### *The Effect of Attendance*

Figure 2 displays the average attendance numbers for each team's home games during the 2011 and the 2017 regular seasons, as reported by ESPN.com. Note that the Los Angeles Chargers temporarily played their 2017 season in a significantly smaller stadium, which was primarily used for soccer, as the franchise was transitioning from San Diego to Los Angeles. Overall, there were 12 franchises that experienced a decrease in average game attendance during the last six-year period. In the meantime, 20 teams had an increase in their average game attendance (with an average gain of 4.71%). The entire league had a slight gain (0.07) in average home game attendance.

Figure 2. Average Game Attendance of NFL in 2011 and 2017

Team	2011 Average Attendance per Game	2017 Average Attendance per Game	Percent Change
Los Angeles Rams*	56,394	63,392	12.41%
Miami Dolphins*	60,886	67,627	11.07%
Green Bay Packers	70,512	78,092	10.75%
Dallas Cowboys*	85,512	92,721	8.43%
Cincinnati Bengals	49,251	53,275	8.17%
Buffalo Bills	62,694	66,775	6.51%
Minnesota Vikings*	62,816	66,721	6.22%
Tampa Bay Buccaneers	56,614	59,952	5.90%
Arizona Cardinals*	61,181	64,217	4.96%
Atlanta Falcons*	68,986	71,960	4.31%
Seattle Seahawks*	66,413	68,976	3.86%
Jacksonville Jaguars*	62,331	64,303	3.16%
Kansas City Chiefs	72,082	74,106	2.81%
Carolina Panthers	72,292	73,617	1.83%
Denver Broncos*	75,327	76,355	1.36%
Philadelphia Eagles	69,144	69,596	0.65%
Detroit Lions	63,742	64,137	0.62%
San Francisco 49ers*	69,732	70,144	0.59%
Houston Texans	71,496	71,774	0.39%
New Orleans Saints	73,042	73,139	0.13%
Baltimore Ravens	71,224	70,588	-0.89%
Pittsburgh Steelers*	63,034	62,471	-0.89%
Chicago Bears*	62,145	61,142	-1.61%
New York Jets	78,986	77,562	-1.80%
Indianapolis Colts	64,828	63,440	-2.14%
Washington Redskins	76,921	75,175	-2.27%
Oakland Raiders*	59,242	57,775	-2.48%
New York Giants*	79,475	77,179	-2.89%
Cleveland Browns	65,859	63,882	-3.00%
New England Patriots*	68,756	65,878	-4.19%
Tennessee Titans	69,143	65,651	-5.05%
Los Angeles Chargers*	65,392	25,335	-61.26%
<b>League Average</b>	<b>67,358</b>	<b>67,405</b>	<b>0.07%</b>

\* Top 50% of Added Value

A correlation analysis between each team’s franchise value and total attendance figure of 2017 was performed. It was found that the franchise value was positively correlated to attendance ( $r = .577$ ,  $p < .01$ ). However, the relationship between the attendance figure and the added franchise value was not statistically significant.

*Renovation, New Construction and Length of Stadium Usage*

Figure 3 displays the age of the current stadium each NFL franchise plays in or will play in, if a new stadium is currently under construction. In this case, the age of the stadiums being used was calculated from the time of data collection (in 2017) to the year when the stadiums were built or renovated. According to our results reported in Figure 3, all teams, but two (except Kansas City Chief and Buffalo Bills), have renovated their stadium within the last six years. Without counting the six teams that are waiting to receive a new stadium, 23 out of the rest 26 NFL teams (88%) had used their current stadium for less than four years after the most recent renovation. In Figure 3, 16 teams with an asterisk were identified as the Top 50% beneficiaries, which had a greater added value than the rest of the league after the completion of renovation (or construction). Among these 16 teams, 10 (62.5%) had their stadium renovated within a year or were waiting to receive a new stadium. On the contrary, among the 16 teams in the bottom 50% in added value, five teams had their most recent renovation done three or more years ago, only four teams (25%) had a recent renovation less than a year (without counting Buffalo Bills’ stadium which was scheduled to be renovated in 2018).

*Figure 3. Stadium Age and Renovation Record of Existing NFL Stadiums*

Team	Stadium Built	Last Stadium Renovation
Los Angeles Rams*	2020	TBD
Oakland Raiders*	2020	TBD
Los Angeles Chargers*	2020	TBD
Atlanta Falcons*	2017	TBD
Minnesota Vikings*	2016	TBD
San Francisco 49ers*	2014	TBD
New York Giants*	2010	2014
New York Jets	2010	2014
Dallas Cowboys*	2009	2014
Indianapolis Colts	2008	2014
Arizona Cardinals*	2006	2017
Philadelphia Eagles	2003	2014
New England Patriots*	2002	2017
Seattle Seahawks*	2002	2015
Houston Texans	2002	2016
Detroit Lions	2002	2017
Denver Broncos*	2001	2015
Pittsburgh Steelers*	2001	2017
Cincinnati Bengals	2000	2015
Tennessee Titans	1999	2016
Cleveland Browns	1999	2015
Baltimore Ravens	1998	2017
Carolina Panthers	1998	2017
Tampa Bay Buccaneers	1998	2016
Washington Redskins	1997	2012
Jacksonville Jaguars*	1995	2016
Miami Dolphins*	1987	2017
New Orleans Saints	1975	2017
Buffalo Bills	1973	2018
Kansas City Chiefs	1972	2010
Green Bay Packers	1957	2015
Chicago Bears*	1924	2015

\* Top 50% of Added Value

The authors had a hypothesis that stadium construction and renovation would have a direct impact on the franchise's added value. We used three years as a cut-off line to divide all teams into two groups. The three-year time period was chosen because the first three years after the construction was the recommended timeframe which the "honeymoon effort" was most intensified (Clapp & Hakes, 2005; Leadley & Zygmunt, 2006). The first group ( $n = 25$ ) included teams which had not received a newly built stadium or had a recent renovation less than three years. The second groups contained seven teams which had their most recent renovation done for three years or more. Comparisons in actual total value and added franchise value were done between two groups, (a) 25 teams with a stadium renovation done within three year, and (b) seven teams with a stadium renovation done for more or equal to three years (see Table 1). The independent t-test showed those 25 teams of the first group actually had a lower average total value than those teams without a stadium renovation within the last three years (\$2.3684 billion vs. \$3.0685 billion). However, those 25 teams' added franchise value was significantly greater than the other seven teams (249% vs. 243%,  $p < .05$ ).

*Table 1. The Effect of Renovation on Total Value and Added Franchise Value*

Category	Condition	N	Mean
Total Value	Renovation done within 3 years	25	\$2.3684 billion
	Renovation done 3 or more years ago	7	\$3.0685 billion
Added Franchise Value	Renovation done within 3 years	25	249%*
	Renovation done 3 or more years ago	7	243%

\* $p < .05$

### *The Effect of Winning*

Figure 5 showed the ranking of each NFL team by winning percentage of each franchise from the 2011 season through the 2017 season. The results included the playoff records of each team as well. Note that there are four teams with a winning percentage of over .600, and 50% of total teams hit the winning mark (.500). To further examine the differences in total and added value between the winning and losing team, the authors divided all teams into two different groups, winning teams and losing teams, and further compared their total and added value through another independent t-test (see Table 2). The results showed 16 teams with a winning percentage greater than .500 had a slightly higher total value than those 16 losing teams (\$2.5775 billion vs. \$2.4656 billion). However, this difference has not reached the statistically significant level. Perhaps, it is surprising to find that losing teams' (winning percentage less than .500) added value within the six-year period was actually higher than the value of winning teams. Despite the difference not being significant, the losing team's value improved in a greater rate than those of winning teams. According to the result of the correlation analysis, winning percentage actually did not have a significant relationship with the total franchise value and percentage of added value during the observed six-year period ( $p > .05$ ).

*Figure 5. Winning Percentage of All NFL Franchises in 2011 and 2017*

Team	Regular Season Record in 6 Years	Playoff Record in 6 Years	Winning Percentage
New England Patriots*	75-21	11-4	0.775
Seattle Seahawks*	65-30-1	8-4	0.681
Denver Broncos*	64-32	5-3	0.663
Pittsburgh Steelers*	61-35	3-4	0.621
Green Bay Packers	58-37-1	5-5	0.599
Carolina Panthers	58-37-1	3-4	0.597
Cincinnati Bengals	56-38-2	0-4	0.570
Arizona Cardinals	54-41-1	1-2	0.561
Dallas Cowboys*	54-42	1-2	0.556
Minnesota Vikings*	54-41-1	1-3	0.555
Kansas City Chiefs	55-41	1-4	0.554
Indianapolis Colts	53-43	3-3	0.549
Atlanta Falcons*	52-44	4-3	0.544
Philadelphia Eagles	51-45	3-1	0.540
Baltimore Ravens	50-46	5-1	0.539
New Orleans Saints	50-46	2-2	0.520
Detroit Lions	47-49	0-2	0.480
San Francisco 49ers*	44-51-1	4-2	0.475
Houston Texans	45-51	2-3	0.465
Buffalo Bills	45-51	0-1	0.464
Miami Dolphins*	45-51	0-1	0.463
Los Angeles Chargers*	43-53	1-1	0.449
Los Angeles Rams*	42-53-1	0-1	0.438
New York Giants*	42-54	0-1	0.432
Washington Redskins	41-54-1	0-2	0.423
New York Jets	38-58	NA	0.396
Tennessee Titans	36-60	1-1	0.377
Oakland Raiders*	36-60	0-1	0.371
Tampa Bay Buccaneers	33-63	NA	0.344
Jacksonville Jaguars*	27-69	2-1	0.293
Chicago Bears*	27-69	NA	0.281
Cleveland Browns	20-76	NA	0.208

\* Top 50% of Added Value

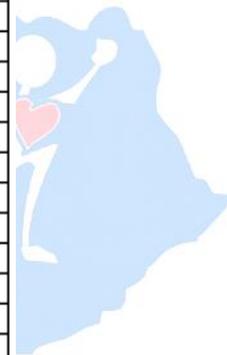


Table 2. The Effect of Winning on Total Value and Added Franchise Value

Category	Condition	N	Mean
Total Value	Winning percentage $\geq .500$	16	\$2.5775 billion
	Winning percentage $< .500$	16	\$2.4656 billion
Added Franchise Value	Winning percentage $\geq .500$	16	245%
	Winning percentage $< .500$	16	250%

### Discussion and Conclusion

After examining various available data sets with utilization of designated independent variables, several conclusions come to the surface. Theoretically, each NFL team (franchise) has the same amount of opportunities to engage in promotional and marketing strategies to enhance its profits. External factors such as the general economy can also contribute to a team’s financial success. When the economy is vibrant, people will have more disposable incomes to spend on discretionary items such as tickets to sporting events (Peters, 2017). When the NFL signs multi-year billion-

dollar broadcasting deals, teams also share those revenues evenly and the league ensures that the games are televised to reach out as many viewers and consumers as possible (Peters, 2017). Therefore, the increase of TV viewership and total attendance are critical in boosting revenues from broadcasting contracts and ticket sales. It is easy to understand why teams need to be located in big metropolitan cities with large media markets, so the teams can grow their fan base and attendance more efficiently. The results of our correlation analysis helped confirm some basic suggestions proposed by literature (Alexander & Kern, 2004; Leeds, von Allmen, & Matheson, 2018; Miller, 2007). The franchise value increased as the average game attendance also rose. However, it is clear that teams have taken other fast approaches to increase their financial value quickly besides cultivating fan base and improving ticket sales.

The authors further confirm a renovation or construction of a stadium clearly affects a franchise's value as suggested by Miller's observations (2007). Among the top-10 newest stadiums built in the NFL, the majority of those 10 teams are also on the list of the top-50% team value (National Football League, 2017). When a stadium is newly built or renovated, we witness the average game attendance soar as the "honeymoon effect" suggested. All the spending or costs for building or renovating the facility have become added value to the franchise. The facility became a part of assets of the owners. This way of gaining franchise value led to a spread of renovation or construction hype by many sport franchises and created unexpected high expenses for the host city's tax payers. The Miami Marlins had most of their new facility paid by taxpayers' monies. It is a controversial subject in the city of Miami to this day (Elfrink, 2011; Notte, 2017). After a small amount of service debt was paid off, the previous owner sold the team and building to a Derek Jeter-led financial group for \$1.2 billion dollars (Jackson, 2017).

Traditionally, sport teams' performance (winning percentage) was thought to be the most vital reason that dictated their financial success. Based on certain case observations, we found the New England Patriots, the team with the highest winning percentage in the six-year timeframe, also had the second highest percentage in added franchise value (325%). On the contrary, the Cleveland Browns, who had the worst winning record from 2011 to 2017, also had the lowest percentage of gain in added value (about 200%). Logically, winning teams will likely bring more fans to the stadium, thus creating more revenues and increasing the value of a franchise. Surprisingly, the authors did not find a meaningful relationship between winning percentage and the total franchise value, as well as added value during the observed six-year period. We suspected there must be other strong contributing factors regarding the increase of franchise value and percentage of added value other than winning.

When teams don't perform well on the court or field, they often ask for a new stadium to attract more fan support. Many teams are now using this practice, renovating the existing stadium or asking for a brand new stadium, to quickly raise the value of the franchise. Regardless of ones' performance level, teams all point to the need to have a newer home to boost attendance and rally for support. Evidently, people are blaming the old FedEx Field, which was renovated in 2012, for ruining the team performance and fans' experience at Redskins games (Zielonka & Paras, 2018). If the host city decide not to offer a new stadium or renovate the existing facility, the team owners will threaten local fans with a proposal of relocation and ask for a new stadium from other cities. For this reason, the authors believe that renovation and construction of stadiums trumps winning in

affecting the increase of franchise value (or added value). The authors, however think it is just a hoax when team owners address the need to build a new stadium to improve performance.

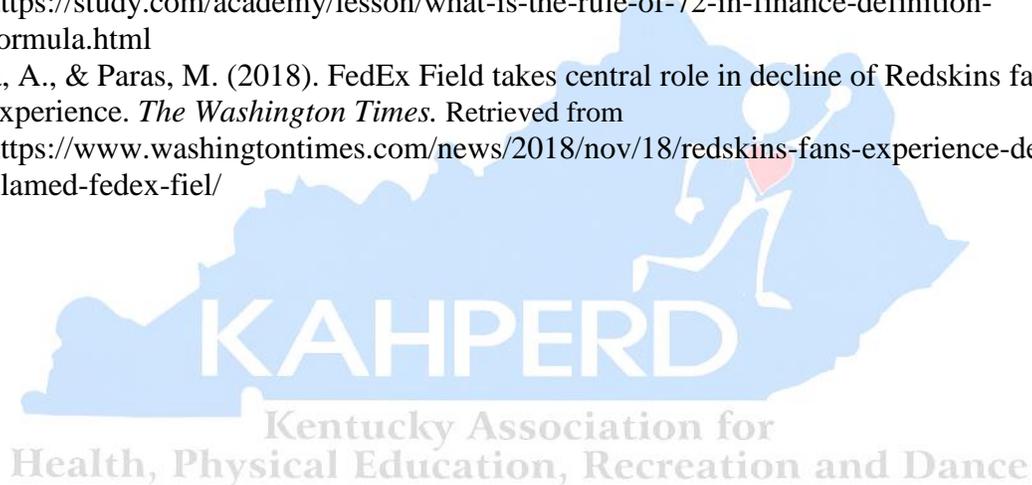
Increases in attendance will certainly boost the value of a team. Although the majority of revenue of the NFL is from broadcasting contracts, ticket and merchandise sales still play a vital role in a team's financial success. Franchises that are able to increase attendance will also be more likely to grow their overall value. To witness the actualization of the Rule of 72 in retail or wholesales businesses, we would assume that firms or organizations must grow their consumers tremendously or expand the stores or sales platforms rapidly. In the case of NFL's growth, we do not really see a massive increase of fans and viewership, or the expansion of the leagues with more franchises. What are the actually reasons that make franchises increase their value so rapidly? The authors do not agree that putting an extra burden on taxpayers to fund a construction or renovation project is a good means to help boost a franchise' value. We sincerely denounce the teams' practice of boosting their own financial gains on the expense of taxpayers' dollars.

Finally, a limitation of our study was not including the impact of broadcasting deals on improving the franchise value. Broadcasting deals can be viewed as a steady fixed annual income that are often settled for a long term period; however, when a new deal is renewed, we often likely see an increased amount of revenue flowing into the teams' account. In the meantime, we would also see a spike of players' salaries after the change of broadcasting deals. Interestingly, the increase of players' salaries is supposed to be extra expenditures that hurt the financial profits of the team. However, this unique increase of cost is reflecting the value of the players, and the players are considered as important assets of the franchise. The franchise value is actually further enhanced with an increase of players' salaries. The authors believe this is an important topic for future researchers to address when examining the valuations of professional sport franchises.

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**(Peer Review Article)****Initiating a New Community Festival and Understanding Economic Impact:  
A Case Study of a Rural Kentucky Community**

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**Introduction**

City-run festivals, such as the art and crafts festival in Paintsville, Kentucky, create opportunities for rural communities to increase their local economy through visitor attendance and local purchases. Paintsville, KY has successfully hosted the annual Kentucky Apple Festival as its proud tradition for more than 50 years (City of Paintsville, 2017). The Apple Festival could draw an average of four to five thousand attendees annually. The Apple Festival visitors traveled from neighboring counties and spent money at many local vendors, traveling festival vendors, local restaurants and gas stations. This festival is an excellent example for a rural or country town to temporarily revitalize its local economy. By engaging local businesses in these art and crafts festivals, festival revenue pours into the local economy and allows businesses to thrive.

Due to the past success of the Apple Festival, the Paintsville community initially developed another crafts and beer festival with the goal of attracting people interested in crafts of all types, ranging from wood carving to craft beer (Eventful.com, 2017). The first annual 'Mountains of Music, Bushels of Arts and Pints on Paint' took place on October 21, 2017 on the streets of Paintsville, Kentucky. This festival attempted to serve as meaningful event to bring the community together, provide great cultural entertainment, and boost the local economy (Eventful.com, 2017; Frost, 2017). The City of Paintsville used social media to advertise the event to potential visitors and vendors within and external to the county. The city also arranged all vendor booths in clusters along the Main Street of Paintsville, and many of the businesses along this street stayed open in the late afternoon during the festival.

The Paintsville & Johnson County Trail Town Committee employed a research group from two regional universities located in Eastern Kentucky to conduct a survey to better understand the economic contributions of the event's inaugural venture. The goal of this study was to determine how the spending patterns of festival attendees fiscally impacted the local economy. To achieve this research goal, the researchers asked Crafts Festival attendees the amounts spent within the city and county in designated spending areas, leading to a deeper understanding of how local festivals of this kind are a viable part of supporting the local economy.

**Literature Review**

*Purposes and benefits of community festivals*

Artists flock to rural communities surrounding cities for assorted reasons including solitary living style, fiscal benefits and landscape (Fleming, 2009). They enjoy the surrounded beautiful nature to fuel their artistic creativity and take the advantage of low living costs in rural communities. As more artists gather in one rural community, individuals interested in art are also drawn to these communities to view the art works. Visitors from beyond the local community benefit the rural economy as they spend money on local arts, food and necessities (Fleming, 2009). Once a unique community of artists is formed, people from all areas often share the information to attract more attention, inspire more visits, and generate more purchases of art works. This is how art and crafts festivals are able to fiscally enhance the local economy.

According to Lee, Lee and Choi (2011), various types of festivals contribute to the community in several ways. These benefits range from increased positive community image to encouraging locals to embrace and display their local heritage for others. Festivals bring local business to collaborate and contribute to the community together (LaHara, 2013). In turn, festivals encourage other local residents to buying products locally and reinvest in the local economy by (Lee et al., 2011). Festivals help improve the communal health of the residents and create a sense of pride. Furthermore, their impact on the local economy are heavily highlighted and considered to be the most important benefit (Çela, Knowles-Lankford, & Lankford, 2007).

To maximize the economic benefits of festivals, the standard trends now are to operate top-notch marketing and event management practices (Çela et al., 2007; LaHara, 2013). The success of such festivals is dependent on how well the events are publicized to the targeted audience. Food and beverage sales are currently becoming the most essential and popular services in the events. If done correctly, food and beverage sales increase the number of tourists, their length of stay, and overall spending at the event and in the surrounding community (Çela et al., 2007). Simply stated, given the proper types of products/services and amount of promotion, a festival event could pay off well for the local economy.

#### *Economic impact of art, crafts and beer festivals*

Economic impact studies are a popular method to identify financial benefits that various events promise to bring in to the event host region. These studies could also be found for gigantic sporting events (i.e., Olympics Games, international, professional, and collegiate sports competitions, horse racing, running races, and automobile racing) and various types of community cultural events or festivals (i.e., music concerts, art and crafts festivals, and beer festivals) (Baade, Baumann, & Matheson, 2008; Chen, Ghirmay, Teame, Lee, Dongfang, & Chiu, 2018; Federal Highway Administration, 2008; Giedeman, Isely, & Simons, 2015; Herrero, et al., 2006; Isidore, 2016; Kubo, 2014; Leonhardt, 2016; Tovar, 2017; Maples, Bradley, Sharp., Lush, Mori, & Wagers, 2017; Upright, Smith, Larson, & Gibson, 2011). To accurately estimate the economic impact of aforementioned sports, recreational, and cultural events, several common statistics must be surveyed and calculated, such as number of actual attendees, average total spending of each attendee at the event, and multipliers adopted to project the impact (Eschenfelder & Li, 2007; Jackson, Houghton, Russell, & Triandos, 2016). In Table 1, readers could find information of three recent economic impact studies done on regional recreational and cultural events. They represented the most recent economic impact projects completed by Maples and Bradley in 2017.

*Table 1. Recent Economic Impact Studies on Tourism*

Researchers and Date	Event	Notes and Significant Findings
Maples, Bradley, Sharp, Lush, Mori, & Wagers (2017)	Big Turtle 50 Miler (a 50-mile trail run)	*\$13,000 generated for the city of Morehead, KY *Primary spending were on lodging, food, and fuel
Maples and Bradley (2017a)	Non-commercial paddling in the Nantahala and Pisgah National Forests	*Non-commercial paddlers contribute \$3.2 million in annual expenditures. *Supports an estimated 35 full time jobs and \$827,000 in wages
Maples and Bradley (2017b)	Mountain Mushroom Festival at Irvine, KY	*A 2-day event with over 20,000 attendees *The festival generated an economic contribution close to \$150,000

Results of several aforementioned economic studies are staunch support for festivals producing positive changes to local rural economies. The economic impact reports also demonstrate how continuously hosting the events or festivals allow the hosting regions or towns to gain notoriety over time. This allows for more people to attend the events in subsequent years further stimulating the local economy. This continuous pattern for contributing to the local economy can also be known as the “rippled effect” (Eschenfelder & Lee, 2007).

Crafts and beer festivals are viewed as great recreational, cultural, and fun events. They are also effective fundraising activities, as well as popular community entertainment (Thorn Brewing, 2016). According to the figures provided by Thorn Brewing (2016), an average beer festival around Southern California cost has 50 breweries attending and serving their beer and an average of 2,500 visitors. A much bigger event, Best Coast Beer Fest, attracts 6,500 to attend and offers 80 breweries.

In general, the admission charge for all types of events varied drastically. At Coachella, California, attendees spent at least \$399 for basic admission for the weekend music festival (Leonhardt, 2016). A typical beer festival admissions ranged from \$10 to \$50 (DeVore, 2017; Thorn Brewing, 2016; Wright, 2015). If an admission is charged at \$50 each, the total gross for that fest can easily reach around \$125,000. According to the economic impact survey done for the 2017 Oregon Brewers Festival (OBF), one of the oldest and most well-attended beer festival in the U.S., it generated an estimated \$23.9 million in economic impact to the community. The spending on food and drink was worth \$6.9 million. It generated \$1.3 million in indirect business taxes for state and local government (Kendall, 2017). Each visiting OBF patrons spent an average of \$532 during the event. Nearly half (48.7%) of attendees were out-of-town visitors.

Events, such as festivals and sporting events, indeed have a positive economic impact on the local communities that host the event. This project specifically report how effective the additional revenue brought by the “Mountains of Music, Bushels of Arts and Pints on Paint” to Paintsville’s

local economy. The researchers also identified the festival participants' average spending during the event and determined the overall economic impact of this crafts and beer festival.

## Methodology

The survey instrument was developed based on the framework of previously developed economic impact surveys with a slight alteration of names of city, county, and event to make it suitable for this project (Giedeman et al., 2015; Jackson et al., 2016; Maple & Bradley, 2017a and 2017b; Maples et al., 2017). The survey included eight questions concerning information of residential location, gender, postal code, race, number of visitors going along with the respondent, overnight accommodations, and estimated expenditures in nine different categories (see Table 1) during the trip for the festival. As the festival took place at multiple locations in the town, each researcher and event volunteers ( $n = 4$ ) was assigned to a different geographic area of the festival to solicit for survey responses. Within the designated area of the festival, the researchers and volunteers paired up in groups and approached adult attendees (visitors) to request their willingness for participating in the survey. Participants would provide their perceptions regarding their thoughts on the festival and their spending patterns specific to the festival. Prior to collection of responses (data), the researchers outlined the survey and ensured that no identifiable collected information could reveal the respondents' identity. If the respondent consented to respond, then the researchers or volunteers proceeded to facilitate survey. The researchers encountered about 150 adults to request for participation and collected 69 copies of completed survey on October 21, 2017 (Saturday). The survey process last about four hours from 1:00 pm to 5:00 pm that afternoon. All survey data was keyed-in to a spreadsheet and further analyzed by the IBM SPSS Statistical 24 software program. The researchers calculated mean- expenditures across six common economic expenditure categories (see Table 2). The paper copies of the survey were later discarded for the purpose of maintaining confidentiality.

## Results

The sample group surveyed at the "Mountains of Music, Bushels of Arts and Pints on Paint" comprised of 45.5% male ( $n = 30$ ) and 54.5% ( $n = 36$ ) female, and 90.0% of the participants self-described as being white. Of those surveyed, 36.4% where from the local postal code of 41240, the postal code for Paintsville, Kentucky. The average group size was 1.71 people, meaning most people traveled with at least another person to the event.

As seen in Table 2, the average expenditure per group was \$69 within Paintsville and \$0.70 in the Johnson County outside of the city. The listed spending categories focused on expenditures within fifteen miles of the event, which targeted expenditures in Johnson County. On average, the largest economic expenditure was in food and drink in restaurants (\$24.50) followed closely by lodging (\$23.33).

*Table 2. Average Individual Spending at the 2017 Paintsville Craft Festival*

Category	Within Paintsville	Within Johnson County
Lodging	\$23.33	\$0
Food and Drink	\$24.50	\$0.39

Grocery	\$2.15	\$0.31
Gas Stations	\$4.45	\$0
Fuel	\$8.09	\$0
Entertainment	\$6.89	\$0
Total	\$69.00	\$0.70

While no official result on the total event attendance was reported, the director of the Trail Town Committee estimated the total attendees was around 1,000. Table 3 examines the projected spending patterns based on three levels of attendance demarcations (1,000; 5,000 & 10,000). This helps give a sense of what can happen as the event grows in attendance.

*Table 3. Estimated Contribution at Certain Attendance Marks*

Attendance	\$69.00 in Paintsville	\$0.70 in Johnson County	Total Added Contribution
1,000	\$69,000	\$700	\$69,700
5,000	\$345,000	\$3,500	\$348,500
10,000	\$690,000	\$7,000	\$697,000

### Discussion & Potential Implications

The data in Table 2 was quite helpful in understanding how different levels of attendance increased the total economic contribution of the “Mountains of Music, Bushels of Arts and Pints on Paint”. Since the estimated the total attendance at the event was around 1,000, the City of Paintsville did not really profit much for its initial year as expected. According to Giedman’s study, a \$7 million dollar of economic impact could be generated through 42,246 visitors (with 13,000 from out-of-state) for the craft beer industry. If the attendance level of the Paintsville Crafts Festival was as high as the Apple Festival, which was around 5,000, the city and county would be able to receive an added economic contribution of \$203,800. In addition to the low amount of total attendees, there were many other factors that impacted the size of the added contribution. About 40% of the attendees were local residents, and most of the non-local attendees did not stay overnight. Therefore, the individual average spending in lodging was relatively small compared to the findings in Giedman et al (2015) (\$23.33 vs. \$73.99). No expenditures were recorded for personal services or rental cars, either. Furthermore, the spending figures also did not include any admission fee to the event. The admission fee of the Paintsville Crafts Festival was set at \$30. It was logical to assume that most of the adult visitors would pay for this fee to test the craft beer. Although the admission fees were most likely to be collected by the various vendors, certain portion of fees would still go to the local region as taxes and rental charges. This still could be a sizeable source income that further increased the added economic contribution. The researchers considered this omission as the primary limitation of our study and an issue to be improved for the future studies.

While the event did not produce the ideal attendance or economic impact as event organizers had hoped, there were some positive news. It is not uncommon to see beer festivals attracting about 400 to 500 people, and eventually grows more in attendance (DeVore, 2017). Unlike other past economic impact studies, which simply provided a lump sum total of impact value in millions of

dollars, our conservative analyses focused on added contribution to the local region. This study did not repeatedly add the direct spending value to the analysis, but simply illustrated the additional gain by the city and county. It offers a realistic insight about the actual economic benefit that rural recreational and cultural festival may bring to the community. Since the city of Paintsville has an annual tourism budget about \$317,000 (Nelson, 2018), a gain of \$203,800 to the local region from a one-day event was a good investment.

A critical challenge that needs to be overcome for the future successful of this annual event is to diversify promotional strategies and advertising techniques. Unlike the traditional Apple Festivals, this new event simply did not have the same size of base and recognition. Our recommendation is to build interest around the event via social media. Social media is a good way to increase attendance of the Craft Festivals beyond the local county by spreading the information of the event to non-locals. Facebook connects people together, is an inexpensive way to advertise, and is quite effective in reaching many people with less effort. It also takes very little effort to maintain and use as advertising over an extended period. Twitter and Instagram are also valuable tools when advertising. Twitter can be used to send out short descriptions and updates on the event while Instagram can be used to entice people to attend the event through pictures. Pictures on the Instagram can be an effective way to communicate ideas and would give people a better understanding of what the event will look like. If people know what to expect, they are more likely to attend and tell others about the event. Social media marketing methods are fast, easy and cost effective. On social media, hashtags can be used to target specific groups and counties that lie outside the general area of Paintsville. Other constructive suggestions provided by the participants for improving the event include: increasing the options of tested beer and relocating the craft beer testing site closer to the Main Street.

In conclusions, Festivals and other community events serve many purposes, including economic benefits that generate tax dollars and local wages and the pride that brings the community together. Community events give families a way to spend time together without the need to travel and overcome typical barriers of attending special events. It gives the chance for families to buy from local vendors, further supporting the local community. Simply stated: festivals - with planning and continued work - can represent a notable economic contribution to the economy while also serving an avenue to bring community members together.

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**(Peer Review Article)****Rural Kentucky Sport Officials' Perspectives on Recruitment, Training and Retention**

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**Abstract**

This case study seeks to understand the experiences of rural sport officials. Data collection focused on motivation, benefits, negative aspects or stressors associated with officiating. The overarching goal was to determine areas sport administrators may address to aid sport official recruitment and retention. Research findings suggest promoting respect for officials while addressing perceived favoritism and supporting officials through timely evaluation, promoting camaraderie, and developing additional recognition measures may aid sport official retention.

*Key Words:* Sport Officials, Retention, Recruitment, Shortage

**Introduction**

Theisen (2017) suggests we currently face a national shortage of youth sport officials. Kentucky athletic directors express the same concern reporting the number of school and prep level officials decreases (Mathison, 2017). The Kentucky High School Athletic Association reported a 4 % decrease in the number of officials from the 2016-17 to 2017-18 academic year (Steers, 2018). This crisis stems from several factors including poor official retention rates, the aging out of officials, the increase in number of youth sport games, and poor conduct of fans causing officials to question their desire to officiate (Mathison, 2017). Complicating the current official shortage is an increase in prep sport participation in 12 sports. Mathison reported between 2000-2001 and 2015-16 academic year's participants in girls prep sports has increased 19.2 % while participation in boys' prep sports had risen 11%. At the same time sports was experiencing growth the pool of potential officials has decreased by 2.36 % between the 2010-2011 and 2015-2016 academic years. This trend is not unique to the United States, much of the research related to sport official retention stems from shortages experienced internationally across sports (Gray & Wilson, 2008; Cuskelly & Hoye, 2013; Forbes & Livingston, 2013).

This paper examines the experiences of officials within Western Kentucky. Researchers sought to understand what motivated individuals to begin officiating, benefits and negative aspects of the officiating experience, and their reasons for quitting. A final object of the project was to obtain ideas from active officials related to recruitment, training, and retention of new officials. Findings provide sport administrators with ideas for improving official recruitment, training and retention.

**Literature Review**

To help understand the current phenomenon facing sport administrators the literature review first focuses on what motivates individuals to become officials, the stressors that may lead them to quit, and ends with an examination of recommendations to help sport administrators recruit and retain officials.

### *Choosing to Officiate*

Individuals decide to pursue opportunities to officiate for a variety of reasons. Phillips and Fairley (2014) found that umpires actively seek the role of sport official rather than participate in other leisure activities. In this investigation, individuals reported that their position as an umpire played a key role in their lives by helping to define who they were as individuals and complemented their leisure activities therefore representing a form of serious leisure. Even though officiating provided a source of identification and leisure, many umpires also reported the position often meant they felt misunderstood or isolated (Phillips & Fairley, 2014). Bernal and Nix (2012) found those who decided to officiate did so for the love of the game or a passion for the sport. Likewise, Hancock, Dawson, and Auger (2015) found that officials begin their involvement in the field for four reasons. Intrinsically, officials may be motivated by passion, enjoyment, and personal development. Extrinsic motivators included money, recognition, and the ability to influence others. Social reason for beginning to officiate included making new friends, integration into their social setting, and the opportunity for new experiences. Finally, officials reported being motivated by the ability to stay active and provide a service for their sport. Warner, Tingle, and Kellett (2013) identified “on the court or playing field” motivation for officials included an opportunity to stay involved in the sport, competition and challenge. While “off the court/field” motivations included money and socialization into the officials’ community.

### *Stress and Burnout*

As sport league administrators began to experience issues recruiting and retaining qualified officials researchers began to examine why individuals stopped officiating. Early work focused on the causes of stress and burnout in relationship to intention to continue officiating. These investigations utilized samples from a variety of sports including baseball and softball (Rainey & Carroll, 1994; Rainey, 1995), rugby (Rainey & Hardy, 1999), basketball (Rainey & Carroll, 1999), U.S. soccer (Voight, 2009) and hockey (Dorsch & Paskevich, 2007). Research results indicated that officials report experiencing mild to little stress (Rainey & Carroll, 1994; Rainey 1995, Rainey & Hardy, 1997; Rainey & Hardy, 1999; Rainey & Carroll, 1999). For instance, Rainey and Carroll (1994) found 88% of the baseball and softball officials reported feeling "very little to a moderate amount of stress" (p. 257). The top five sources of mild stress for these officials included fear of failure, fear of physical harm, time pressure, and interpersonal conflicts (Rainey, 1995). Similarly, basketball officials reported mild amounts of stress from performance concerns, interpersonal conflict, time pressure, and lack of recognition. Fear of physical harm did appear as a source of their stress (Rainey & Carrol, 1999). Likewise, rugby referees reported mild stress from performance concerns, time pressure, and interpersonal conflict. They also did not report stress derived from fear of physical harm (Rainey & Hardy, 1999).

Among National Intercollegiate Soccer Official Association members you find similar stressors including conflicts with officiating and family demands, making a controversial call, and conflict between officiating and work demands (Voight, 2009). Hockey official sources of stress depended upon the officials certification level (Dorsch & Paskenvich, 2007). For officials certified at levels 1, 2 and 4 the top five stressors included threats of physical abuse, difficulty in working with their partner, coach confrontations, making controversial calls, and verbal abuse from coaches. Level 6 official's included making controversial call, confrontation with coaches, difficulty working with their partner, making the wrong call, and being in the wrong position to make a call in their top five stressors.

Two investigations linked stress, burnout and intention to quit (Rainey & Carroll, 1999; Rainey & Hardy, 1999). Within rugby, officials listed interpersonal conflict and time pressure related to burnout as top concerns (Rainey & Hardy, 1999). In the same sample, burnout and age was related to intention to quit. A similar link appeared for basketball officials in that burnout stemmed from performance concerns, time pressure and interpersonal conflict (Rainey & Carroll, 1999). Like their rugby referee peers, basketball officials also indicated burnout contributed to their intention to quit officiating.

As officials reported their perspectives on stressors, and potential aggression experienced, researchers also examined if abuse or threats of abuse within the official community impacted retention. Folkesson, Nyberg, Archer, and Norlander (2002) investigated life orientation, referee experiences with threats and aggression and coping strategies of sport officials. Overall, the researchers found younger referees were more prone to experience threats and aggression. Additionally, experiences of threats and aggression caused younger referees to have more pre-match worry and concentration issues during matches. In terms of ability to cope with threats and aggression, referees with a pessimistic orientation had greater issues dealing with aggressive spectator behavior (Folkesson et al., 2002). Kellett and Shilbury (2007) found one coping strategy used by umpires included reframing abuse. From the perspective of umpires participating in their investigation, violence that they may experience represented a normal part of umpiring. While Folkesson et al. (2002) research suggested age may play a part in coping with violence experienced by referees, Kellett and Shilbury (2007) found years of experience did not play a role in the umpires' reframing of violence as a normal part of the game. Focusing on the experiences of English soccer league referees, Wolfson and Neave (2007) found these referees expected to hear dissent and abuse from fans, coaches, managers, and players. To cope with this criticism the officials focused on the lack of knowledge or biases of those leveling the criticism (Wolfson & Neave, 2007).

Others continued to develop the understanding of how sport officials managed potential stressors. Voight (2008) found to handle stress associated with making the wrong call officials asked their peers what they would do to handle the stress. A second way to handle this stress including "increasing the quality and effort of their officiating" (p. 97). Officials in the investigation cited their top stress reduction strategy included thinking hard about steps to manage stress and asking their peers what they did.

As researchers examined the official's perspective of stressors related to their position, Sabaini (2001) shared several reasons league administrators believe there is a referee/official shortage. First, league administrators believed a lack of new recruits entering the ranks of officials was a bigger problem than retention. While only 7% of officials believed that both recruitment and retention facilitated the shortage of officials (Sabaini, 2001). Secondly, administrators believe that poor sportsmanship followed by career and family demands contributed to their loss of officials. When officials were asked why they quit, their top reasons included job/career demands, poor participants sportsmanship, poor spectator sportsmanship, time missed with family and friends, pay, and relationships with assignors (Sabaini, 2001). Forbes and Livingston (2013) found that hockey officials who quit officiating left because of concerns they had with their association. These concerns included few opportunities to move up, poor payment, poor recognition for good work, displayed little concern for officials, and disregarded the official's best interest in decision making. Forbes and Livingston also found differences in why new versus more experienced officials leave. New officials reported stress and abuse either verbal or physical as reasons for quitting while more experienced officials reported demands of career or family as reasons for quitting. Using a broader sample of officials, Hancock et al. (2015) examined why three different classifications (i.e. interactors, monitors, and reactors) of sport officials quit. Interactors have a high level of athlete interaction on the field and have to attend to several cues while monitors had limited interaction with athletes and assess quality of performance. Finally, reactors had few responsibilities and little interaction with athletes. Overall, the top two reasons for quitting included stress and poor recognition. Additionally, reasons for quitting differed by classification and intention to quit. For instance, those officials classified as interactors suggested a lack of support drove them to quit more often than officials classified as reactors. Monitors cited a lack of time as a reason to quit more than officials classified as interactors (Hancock et al., 2015).

### *Current Understanding of Shortage*

As researchers examined the official's perspective of stressors related to their position, Sabaini (2001) shared several reasons league administrators believe there is a referee/official shortage. First, administrators believed a lack of new recruits was a bigger problem than retention. While only 7% of officials believed that both recruitment and retention facilitated the shortage of officials (Sabaini, 2001). Secondly, administrators believe that poor sportsmanship followed by career and family demands contributed to their loss of officials. When officials were asked why they quit, their top reasons included job/career demands, poor participants sportsmanship, poor spectator sportsmanship, time missed with family and friends, pay, and relationships with assignors (Sabaini, 2001).

Forbes and Livingston (2013) found that hockey officials who quit officiating because of concerns they had with their association. These concerns included few opportunities to move up, poor pay, poor recognition, little concern for officials, and disregarded the official's best interest in decision making. Forbes and Livingston also found differences in why new versus more experienced officials leave. Newer officials reported stress and abuse either verbal or physical as reasons for quitting while more experienced officials reported demands of career or family as reasons for quitting. Using a broader sample of officials, Hancock et al. (2015) examined why three different classifications of sport officials quit. As part of this investigation the researchers classified officials

as interactors, monitors, and reactors. Interactors have a high level of athlete interaction on the field and have to attend to several cues while monitors had limited interaction with athletes and assess quality of performance. Finally, reactors had few responsibilities and little interaction with athletes. They found the top two reasons for quitting included stress and poor recognition. They also found a few differences between official classification and intention to quit. For instance, those officials classified as interactors suggested a lack of support drove them to quit more often than officials classified as reactors. Monitors cited a lack of time as a reason to quit more than officials classified as interactors (Hancock et al., 2015).

### ***Recommendations for Retention***

Understanding the need to develop better strategies to recruit and retain sport officials researchers developed several recommendations for sport managers. Philips and Fairley (2014) believe that socialization plays a key role in helping officials feel part of a community of officials. The researchers suggested that administrators develop opportunities for officials to socialize. These opportunities may be formal or informal and tied with opportunities to learn their roles, skills needed to officiate, and an on-going support official's need. The researchers suggested another key component in recruitment and retention of officials included active involvement of officials in their association and the sport organization in the development of strategies to encourage participation and retention. Hancock et al. (2015) further suggested sport organizations need to develop recruitment and retention strategies that focus on the intrinsic values for officiating, create strategies to promote more respect among key stakeholders such as coaches, players, and fans. Finally, the researchers believed it is important for sport organizations to recognize the achievement of sport officials. Forbes and Livingston (2013) also recognized the importance of rewarding officials. Their research also suggested the need for sport managers to address issues such as unfair payment structures for officials, lack of training, evaluation and feedback that would allow officials to become better, and disinterest in the interests and/or concerns of the officials. Linking motivation to beginner officiating to recruitment and retention Warner et al. (2013) suggested sport managers should also help establish policies that standardize sport official licensure in order to allow officials to maintain their involvement and credentials if relocated because of career or family obligations.

To date investigations have examined the experiences of sport officials internationally within a variety of sports. Investigators have also examined the experiences of officials at different levels focusing on amateur and professional officials. These investigations have examined potential stressors, perceptions of abuse or threats, burnout, intention to quit and official recruitment and retention. This investigation continues this line of research focusing on the experience of officials working in a rural interscholastic sport context. The intention of the researchers is to provide sport administrators with a potential source of information with which to enhance their recruitment and retention efforts.

## **Methodology**

### ***Research Question***

The following questions guided the investigation: (a) What motivated the officials to begin officiating? (b) What benefits did they derive from officiating? (c) What negative aspects or stressors were associated with officiating? And (d) What ideas did they have related to recruitment, training, and retention of sport officials? (See Appendix A for all questions)

### *Research Design*

A qualitative research design was used to examine the experiences of sport officials in youth and high school athletics in western Kentucky. Researchers selected a case study design to allow for the discovery of insights into the contexts and process that officials experience in their decisions to continue officiating. Merriam (1998) proposed, through case study research, investigators are allowed opportunities for discovery of context and processes. While Patton (2002) explained case study research designs provide a depth of understanding that facilitates the researchers' ability to connect to others interested in the process. By its nature qualitative data facilitates a researchers' ability to tell a story. Use of a case study design allowed the researchers to explain the why and how of the decisions (Schramm, 1971). Within this investigation, the case study design permitted researchers to gain an understanding of one group of sport officials' reasons for officiating, satisfaction gained, challenges experienced, and ideas to aid in retention and recruitment efforts.

Within a case study, the researchers serve as the primary instrument of data collection using fieldwork and inductive reasoning to provide a thick description of the context, experiences, and orientations of those officials participating in the investigation (Olson, 1982). As a primary data collection instrument, researchers must also be mindful of preconceived notions throughout the data collection process (Finlay, 2008). To mitigate these perceptions researchers used reflexive journals (Finlay, 2008).

Before beginning data collection this study was reviewed and approved by the Institutional Review Board (IRB) for Human Subjects protection at the researchers' institution. Data collection for this investigation involved several sources including document mining and semi-structured interviews. Documents provide both a source of objective information independent of specific research agendas and records of events researchers may not have directly observed (Merriam, 1998; Stakes, 1995). The use of documents as part of qualitative research studies serves to collaborate and strengthen research findings (Yin, 2003). Document mining for this case study involved reviewing the state's high school athletic association documents including a review of board of control meeting minutes, strategic plan, and official information relating to licensing, sportsmanship statements, and available resources. Additionally, the researchers reviewed previous work relating to official retention, satisfaction, and recruitment.

Interviews provide insights into the stories behind processes while providing a rich source of information (McNamara, 1999; Gillhan, 2000). The primary means of data collection for this project utilized semi-structured interviews of key-informants. Researchers used an interview guide developed from mining information synthesized from prior work investigating the satisfaction, recruitment, training, and retention of sport officials. Open-ended questions allowed key-informants to share their insights with the researchers. Appendix A includes the project's interview guide. Patton (2002) proposed the use of interview guides helps to ensure researchers follow a line of reasoning while also allowing for exploration of topics of interest.

The researchers selected a convenience sample within two of the 16 regions to recruit officials to participate in the case study. This sample included officials from the regions that the researchers lived/worked. Creswell (2007) suggested a convenience sample decreases expenses associated with travel, saves times, and allows for easier access of study participants. Additionally, the researchers purposefully selected officials with 5 or more years' experience officiating at the high school or middle school level. Participants officiated at the high school and recreation league level. Male and female officials were contacted to participate. Individuals contacted to participate in the investigation officiated in a variety of sports. Potential participants were contacted via email. The researchers also secured potential participants through contacts developed while working in youth sports within the region. Finally, as part of the interview process some key informants volunteered potential interview sources. Dworkin (2012) suggested an adequate sample sizes for qualitative research ranged from 5 to 50 participants.

Interviews lasted approximately 1 hour. With permission interviews were recorded. The researchers also took detailed interview notes. All interviews were immediately transcribed upon completion. All transcripts were reviewed for accuracy. Researchers used the constant comparative method to determine themes that emerged from the data (Glaser & Strauss, 1967). This process began with each researcher analyzing each interview individually. Then the researchers met to collectively review and discuss themes. In qualitative research, transferability is the equivalent of generalizability common to quantitative research (Merriam, 1998). To establish transferability of the findings within this case, researchers strived to address issues of trustworthiness through research methods that lead to credibility, transferability, dependability, and conformability (Guba, 1981). Close attention to study design, careful selection of key informants with firsthand experience of the question under investigation (Guba, 1981), maintain an audit trail (Anfara, Brown, & Mangione, 2002) and use of a thick description of findings (Merriam, 1998) contributed to this case's transferability to a similar context.

## **Results**

### **Kentucky Association for Health, Physical Education, Recreation and Dance**

#### *Information on the High School Athletic Association*

The High School Athletic Association selected for this study is located in the Southwestern United States. The association began in 1917 with 18 charter members. By 2015 the association grew to 277 members. Currently, the association sanctions 14 competitive sports and 4 sport activities. Recent additions to the competition schedule include Archery, Cheer, and Bass Fishing in 2013, and Field Hockey in 2015. During the 2015-2016 academic year 79,805 participants were on official association rosters. The association has 16 regions. Regions have their own assigning secretary responsible for conducting meetings, trainings, evaluations of officials; and coordinating the assignment of licensed officials to sanctioned competitions within its region.

#### *Profile of the Case Study Officials*

Individuals who agreed to participate in the case study officiated at the high school, middle school, and elementary level. One official also reported officiating at the National Association of

Intercollegiate Athletics (NAIA) level. The sample included fourteen officials, 13 men and one female official. Participants were certified by their local high school athletic association and/or received orientations by the recreational leagues they officiated. Respondents officiated a wide range of sports including basketball, baseball, football, softball, and volleyball. Several respondents officiated multiple sports. Participants averaged 19.92 years' experience. Half of the case study officials officiated 7-19 years and half officiated 23-39 years. The least experienced official officiated only seven years; the most experienced officiated for 39 years. Participants held other full-time positions and officiated part-time. Full-time positions held included the fields of education, business, government, and law enforcement. All shared a passion for the sports they officiated or reported being "sports minded". Two had previously coached. One currently held the position of high school athletic director. Another also served as the association's assigning secretary of the sport they officiated. Five officials reported playing the sport the officiated at the high school or collegiate level.

### *Themes*

Table 1 provides an overview of the themes garnered from the interviews. The five themes areas presented within the table include motivation to begin officiating, personal benefits, negative aspects, role in quality, and recommendations for recruitment and retention.

*Table 1. Primary Themes Concerning Sport Officials' Perspectives on Recruitment, Training and Retention*

<b>Primary Theme</b>	<b>Topics Under Each Theme</b>
Initial Motivation to Officiate	<p><i>Continue involvement</i></p> <ul style="list-style-type: none"> <li>• Desire to stay involved in sport enjoyed playing</li> </ul> <p><i>Enjoyment</i></p> <ul style="list-style-type: none"> <li>• Passion, love of sports, enjoyment derived from officiating</li> </ul> <p><i>Give Back</i></p> <ul style="list-style-type: none"> <li>• Desire to help young players learn</li> <li>• Desire to give back to sport they loved</li> </ul> <p><i>Extra money (income)</i></p>
Benefits of Officiating	<p><i>Physical activity</i></p> <ul style="list-style-type: none"> <li>• Stay in shape</li> <li>• Health</li> <li>• Exercise</li> </ul> <p><i>Enjoy working with kids</i></p> <ul style="list-style-type: none"> <li>• Helping them</li> <li>• Teaching the game</li> <li>• Giving back to the kids</li> </ul> <p><i>Friendship</i></p> <ul style="list-style-type: none"> <li>• Make new friends</li> <li>• Enjoyed the friendships that have developed</li> </ul>
Negative Aspects	<i>Behavior (fans, spectators)</i>

	<ul style="list-style-type: none"> <li>• More issues with parents &amp; spectators being more aggressive with officials</li> <li>• Fans getting worse</li> <li>• Their team doesn't win going to hear about it</li> </ul> <p><i>Travel time</i></p> <ul style="list-style-type: none"> <li>• Driving long and boring</li> <li>• Travel for game extensive</li> </ul> <p><i>Pay</i></p> <ul style="list-style-type: none"> <li>• Not enough to cover time and investment</li> </ul>
Stressors Experienced	<p><i>Fans and coaches behavior</i></p> <ul style="list-style-type: none"> <li>• Irrational fans making the physical threat</li> </ul> <p><i>Fear of making wrong call/mistakes</i></p> <ul style="list-style-type: none"> <li>• Guilt and embarrassment</li> </ul> <p><i>Big games/high stakes games</i></p> <ul style="list-style-type: none"> <li>• Fear for making the mistakes</li> <li>• Self-imposed anxiety</li> </ul> <p><i>General health concerns</i></p> <ul style="list-style-type: none"> <li>• Work for long and late hours</li> </ul>
Recruiting & Retention Recommendations	<p><i>Recruitment Ideas</i></p> <ul style="list-style-type: none"> <li>• Target former players by talking with high school coaches to identify potential officials</li> <li>• Have current officials promote &amp; talk up</li> <li>• Offer recruitment trainings, classes, workshops at high schools for those interested</li> </ul> <p><i>Respect</i></p> <ul style="list-style-type: none"> <li>• Promote respect for officials</li> <li>• Schedule carefully, new officials seem to get the hard coaches and longest travel distance</li> </ul> <p><i>Training of Officials</i></p> <ul style="list-style-type: none"> <li>• Evaluation is important to help learn</li> <li>• Promote camaraderie</li> <li>• Motivate with opportunities to officiate higher stakes games if good official</li> </ul>

## Discussion

Hancock et al. (2015) suggests individuals are intrinsically, extrinsically, and socially motivated to pursue opportunities to officiate. Officials participating in this investigation share the same motivating factors. Research findings suggest intrinsic motivation included enjoyment, passion or love of sport, and giving back to others. To some extent, they are also motivated extrinsically by money. Financial reward was reported mainly at entry as a desire to "make extra money while in school". Financial considerations also pertained to their selection of sports to officiate. This consideration stemmed from the "cost of equipment needed to officiate" and "travel". Social

factors influencing decisions to officiate include opportunities to make "new friends", "stay active" or "service to the sport".

Researchers suggest sport officials across a variety of sports experience little to mild or moderate levels of stress (Rainey & Carroll, 1994; Rainey 1995, Rainey & Hardy, 1997; Rainey & Hardy, 1999; Rainey & Carroll, 1999). These stressors often include time pressures, interpersonal conflict (Rainey, 1995), and controversial calls (Voight, 2009). Within this study, sport officials reported similar stressors adding other stressors including "high stakes games" and "health". Health concerns reported included wear and tear on their body related to officiating and the individual's general health. Health related stressors reported within the case study could be a direct result of the 19.92 average years of officiating experience of key respondents. The negative aspects reported by officials participating in the case study appear to anecdotally relate to potential stressors officials experienced. For example, officials participating in the case study report more "aggressive fan behavior" and "hearing about it when their teams don't win" may lead to stress associated with controversial calls, fear of failure, and fear of physical harm (Rainey, 1995).

Forbes and Livingston (2013) found that many of the reasons officials discontinued officiating related to league or association administration i.e. payment, poor recognition for good work, and disregard for the official's best interest. When asked how long the officials participating in the investigation would continue officiating their responses tied to health-related concerns. Vought's (2009) family demand and work demand - officiating conflicts was also a consideration when determining if they would still officiate.

Philips and Fairley (2014) suggest developing ways for officials to formally or informally socialize may aide retention. Others have suggested developing or improving ways to recognize officials could also help sport administrators retain officials (Forbes & Livingston, 2013). Officials participating in the case study, believe training may aid in camaraderie concurring with the need to include social activities as part of retention efforts. The promotion of respect for officials was also shared as a way to help retain officials. Promoting respect may mean working with players, fans, and coaches to promote sportsmanship and respect for the officials working games to help defuse increasing unsportsmanlike behavior case study officials reported as a negative aspect of their roles. Finally, while they were satisfied with their association's support overall case study officials noted addressing association administration may increase retention. Concerns shared related to evaluation and perceptions of favoritism. Reported favoritism stemmed from the assignment of high stakes games. A second administration concern involved evaluation consistency. Case study officials believed using evaluation as a training tool that occurred more consistently and using high stakes games to motivate and reward good officials were a couple ways address association administration concerns related to retention. Finally, case study officials suggested careful attention when assigning games may aid retention. Case study officials suggest many times new officials are assigned games others do not want because of travel distance and the perception among officials that the team had a difficult coach or coaching staff.

### **Implications and Recommendations**

Understanding the experiences of those who officiate within prep sports provides valuable insights for program administrators. The current study provides an opportunity to garner ideas related to

recruitment and retention as sport administrators face growing participation rates and a dwindling number of officials. Identification of potential stressors and/or reasons to quit could help sport administrators develop new trainings to help officials manage these stressors. These programs might include peer mentoring programs to help new officials begin to build relationships, develop their officiating skills, and have a sounding board for concerns as they learn their new role. A mentoring program paired with consistent evaluation of officials by association leadership could address areas of skill development. As part of the evaluation process, associations could develop a method to objectively rate officials and reward consistently high performing officials with opportunities to work high stakes games. While aiding skill development this would also help motivate association officials. Addressing travel distance and pay per game concerns is another administrative challenge. One suggestion to address travel distance concerns was to develop a rotation system that attempted to evenly distribute competitions that involved extensive travel and/or have difficult coaches more systematically among all officials. This system could also aid in the reduction of cherry picking contest based on coach or fan behavior. To address situations in which work, or home conflicts prevented accepting a specific game assignment, study officials suggested guidelines for turning down games are included in the assigning rotation system.

### **Future Research and Limitations**

While the current investigation allowed researchers to understand the experiences of the participating sport officials, the investigation is not without limitations. The sample size could be expanded. Additionally, the officiating experience criteria for selection of officials with 5 plus years of experience provides only the perspective of established officials. The inclusion of officials who have recently entered the field would add another valuable perspective. Finally, while the researchers did not exclude sport officials based on gender from participating in the investigation, seeking the experiences of more female officials would be beneficial. Hence, future research could include sport officials with less than five years' experience and seek to include more female officials. The inclusion of this population could further aid recruitment and retention efforts by identifying specific challenges faced, by as well as specific recruitment and retention ideas. Future research could also begin to evaluate the effectiveness of recruitment and retention efforts within each association as they work to address the shortage of sport officials.

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## Appendix A

### Semi-Structure Interview Questions

#### *Demographic questions:*

1. How long have you been officiating?
2. What sports have you officiated and which ones do you currently officiate?
3. What levels have you officiated?
4. What age did you start?
5. Is this your full time job?
6. What is the best/worst sport to officiate?
7. Gender: Male or Female
8. Age: \_\_\_\_\_

#### *Semi-structured questions:*

1. What originally drew you to become a sport official? Why do you do it?
2. Will you tell us about the benefits or satisfaction you experience when officiating? Why do you enjoy it?
3. Will you tell us about some of the negative aspects of your officiating experiences? What are the negatives?
4. How do you see the role of the official in the success of sport programs?
5. How do coaches and other stakeholders impact the success or failure of officials?
6. Is officiating a viable career option? Why/Why not?
7. What do you consider the most important responsibility for the sport official?
8. What role do you believe officials play in game/league quality?
9. How do officials impact each other?
10. What is the most memorable moment you have of when you were a sports official?
11. What were some of the causes of stress while you were officiating?
12. What were/are some strategies to manage the stressors you associated with officiating?
13. Do you feel supported by the official's association you belong to?
  - If yes, what/how do they support their members?
  - If no, what are your concerns and/or how could they do a better job of supporting officials?
14. What are your thoughts on the quality of league administration? Do they provide the type of feedback, training and pay that help make you feel valued?
15. How long do you see yourself officiating?
  - If no longer officiating would you consider officiating again?
  - Why or why not?
16. What characteristics do you think contribute to an official's effectiveness?
  - May follow-up with question about personal attributes that make an official effective.
17. What competencies contribute to an official's effectiveness?
  - Does the association help develop these competencies?
18. What do you want others to understand about officiating?
19. How should organizations recruit new officials? How do they make them stay?
20. Discuss anything else you believe is important to hiring and retaining officials.

**(Peer Review Article)****The Impacts of a Head Coaching Change on Intercollegiate Student-Athletes**

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**Abstract**

The purpose of this study was to discover the impacts on intercollegiate student-athletes subsequent to a head coaching change in one mid-major NCAA Division I institution in the Southeast. Using qualitative methodology, specifically interviews and in-depth analysis, three emergent themes were identified: (1) Student-athletes seem to accept head coaching changes, (2) Head coaches are essential to team success, and (3) The student-athlete-coach relationship is the core factor of the intercollegiate experience. All participants articulated a shift in thinking that began with the shock and anxiety of losing a head coach, followed by a discussion of the coach's importance, or unimportance, to the success of the program. Administrators, coaches, and support staff can use this information to provide improved programming for student-athletes who experience such a change.

**Introduction**

When an organization experiences a change in leadership, employees may undergo feelings of loss of control, a sense of job insecurity, and decreased individual self-esteem and well-being (Kim, Song, & Lee, 2013). Kim et al. (2013) explained that when a major change occurs in an organization, "new norms and rules are often adopted, causing old norms and rules to be less important" (p. 1023). The corporate world and the world of intercollegiate athletics are similar in many ways when applying various concepts of organizational behavior, including employers (coaches) and employees (student-athletes) (Love & Seungmo, 2019). When a head coaching change takes place, the student-athletes, much like corporate employees, may feel the stress of the unknown as the organization (athletic program) experiences a change in possible leadership style, routine, environment, and self-efficacy. Part of the stress experienced by the student-athletes is a result of the relationship, good or bad, with the head coach (Hwang and Choi, 2016).

Following the 2017-18 NCAA men's basketball season, there were a total of 55 coaching changes (Norlander, 2018). For many student-athletes, the most notable factor in the selection of an athletic institution is the head coach (Magnusen, Kim, Perrew, & Ferris, 2014). As the success of an athletic program is contingent upon many factors, including the individual performances of student-athletes, the impact of a head coaching change is significant. Pate, Stokowski, and Hardin (2011) investigated the experience of four football student-athletes who endured three head coaching changes in three years. Their study supported the notion that student-athletes experience questions of trust, individual strength, and their future. Similarly, Shipherd, Wakefield, Stokowski,

and Filho (2018) establish that head coach turnover impacts team dynamics and success, the program culture, and athletes' motivation.

According to Caroldine, Almond, and Gratto (2001), successful student-athlete support programs have commonalities in programming, including academic advising, eligibility monitoring, peer mentoring, study hall, tutoring, and career counseling. The literature has provided no evidence of support programming for student-athletes during a coaching change, which is an increasingly common phenomenon. In the progressively evident business-based model of intercollegiate athletics, an understanding of the impact of such a significant organizational change has critical implications on many facets of athletic programs, institutions, and future research (Schoppmeyer, 2004). This study investigated the impact of intercollegiate head coach changes on the student-athlete experience. Recommendations derived from research findings have implications for improvements in student-athlete support services, head coach transitions, and player development.

## Literature Review

The evolution of collegiate athletics from regional activity to national phenomenon has led to increasing commercialization. Carson and Rinehart (2010) suggested that collegiate athletics has developed into a "distinct financial enterprise" (p.2) fueled by media rights, ticket sales, merchandise, conference shares, and annual giving. Suggs (2009b) noted that most athletic programs receive annual subsidies and funding from their universities, and student fees in order to operate. Many believe increased spending on athletic programs builds successful athletic programs while benefitting instructional advancement (Suggs, 2009b). Hence, intercollegiate athletics provide a "window" into the university (Stinson & Howard, 2010). Studies have sought to explain the impacts of the business of college athletics. Many have connected the athletic business model to a Corporate America business model, complete with a manager (coach) and employee (player) (Carson and Rinehart (2010). Thus, organizational behavior theories formed the basis of this research.

Changing organizational leadership can cause tensions and uncertainties resulting in changes in employee performance (Grusky, 1960, 1963, 1964, as cited by Brown, 1982). Within collegiate athletics, leadership changes have similar performance consequences. Investigating the effects of leadership changes on collegiate football team success McQueary (1997) discovered a significant relationship between a head coaching change and team performance. In this case coaching changes negatively related to team success. Beck (2002) conducted research on cognitive anxiety of student-athletes who experienced a head coaching change. Beck discovered that, on a cognitive level, very low levels of anxiety were seen. The Beck study supported the concept that a head coaching change may only slightly impact student-athlete well-being and organizational success.

The literature on organizational turnover has discussed the importance of trust within the organization. Barnhill and Turner (2015) explain how the recruiting process in intercollegiate athletics is much like the recruiting process in the corporate world whereby coaches must assume the role of the salesperson while attempting to portray an accurate representation of the intercollegiate experience (the implied contract). Morrison and Robinson (1997) suggested that breaking a contract results in a lack of trust and loyalty of the employee, causing the employees to

reduce their contributions. Barnhill and Turner (2015) asserted that “it is reasonable to assume that student-athletes’ performance and behavioral outcomes will be impacted by psychological contract breaches and violations” (p. 39).

Hart-Nibbrig and Cottingham (1986) described the idea of “corporate athleticism” explaining the public not only wants a “winner” they also want a winning program due to the structure of commercialized sport. During the 2017 year, the NCAA reported \$950,800,000 in revenue from television and marketing rights, championships, investments, sales, and contributions (ncaa.org). Commenting on the state of American institutions, Bok asserted, “American universities, despite their lofty ideals, are not above sacrificing academic values – even values as basic as admissions standards and the integrity of their courses – in order to make money” (2003, p. 54). Division I intercollegiate sports programs have become a big business and “are in direct competition for the entertainment dollar” (Schoppmeyer, 2004, p. 13).

Industrial-organizational physiologists have investigated organizational turnover and its relationship to work motivation and satisfaction. Locke and Latham (1990) proposed that motivation to work is explained with three theories: goal setting theory, expectancy theory, and social-cognitive theory. The authors claimed that self-efficacy and rewards and satisfaction lead to organizational commitment; they increase as an employee meets goals. As such, the assumption can be made that intercollegiate athletic coaches and their counterparts in the business world develop an enhanced commitment to their organizations as they win games/build success in their organizations.

Coaches who have experienced a great season are lured to more prestigious jobs. Likewise, coaches who have had poor seasons are fired and replaced by those coaches with a record of success and the ability to take the team to the next level. Burton and Peachey (2013) believed that if coaches earned less than university presidents, a lower number of coaches would exit the profession. The “coercive pressures” of the alluring positions forced institutions to engage in expensive practices to obtain the best coaches and players in order to compete with their counterparts; they do what is needed to win (Burton & Peachey, 2013). In addition to the post-season domino effect of coaching changes, institutions as a whole rely heavily on the “distinct financial enterprise” (Carson & Rinehart, 2010, p. 2) of the athletic programs as a means to bring notoriety and support to the university.

Benford (2007) contributed to the discussion noting that coaches’ salaries often are not only higher than university chancellors or presidents, but they also have the opportunity to earn more if the team is successful in post-season play, if they offer summer camps, and if they participate in media shows/commercials. A 2016 report published by ESPN indicated in 39 out of 50 states, a college football coach or a men’s basketball coach was the highest paid employee in the state (Gibson, Keller, & Chandan, 2017).

Recruiting in college athletics often is a very intimate process, whereby student-athletes and their families form a close relationship with the coaches. Universities make sales pitches to student-athletes to attend the institution and offer promises of a degree and, oftentimes, fame. This highly

competitive process makes the relationship between the student-athlete and coach a crucial factor in the success of recruiting athletes (Root, 2009).

According to Sullivan and Strode (2010), coaches are a crucial, if not the most important, factor for an athlete's motivation. In their study on the stressors experienced by student-athletes, Lu et al., (2012) concluded that many factors can be a source of stress for student-athletes. Among these stressors are factors such as relationships with coaches, performance demand, and academic performance. Coaches strive to help them realize their potential in hopes they will become self-determined and motivated to succeed.

A 2006 study conducted by Turman examined coaching behaviors in relation to student-athlete satisfaction. The study consisted of 307 athletes from 20 high school athletics programs and suggested that, when coaches were autocratic and gave positive feedback, the student-athletes reported higher levels of learning. While most of the literature in the Turman study indicated that positive feedback and environment are ideal for student-athlete satisfaction, an indication also was seen that the reverse behaviors lead to diminished motivation. Turman pointed out that when coaches embarrassed their players, treated a player with favoritism, or were aggressive, lower levels of satisfaction, good sportsmanship, and motivation resulted. The student-athletes did not enjoy playing for a coach whose character they did not respect. Additionally, in a study conducted by Robbins and Stanley (2012), results indicated that the coach-player relationship is very important in reducing player regret to refocus efforts on performance. The researchers noted that helping athletes focus on their abilities, rather than on their inabilities, helped them work toward their future goals.

In addition to the literature that has expressed the importance of the student-athlete and coach relationship (Jowett, 2007; Jowett, Shanmugam, & Caccoulis, 2011), coaches have also expressed the importance of knowing athletes on a personal level (Gilson, Paule-Koba, & Heller, 2013). In their empirical study, Gilson et al. (2013) investigated the "social-psychological impact on sport and academics when athletes experience a coaching change" (p. 166). The researchers interviewed 47 collegiate student-athletes on topics such as social pressures related to a head coaching change, the academic stress of a head coaching change, and self-regulation processes used by the student-athletes during this change. Upon analysis of the interviews, the researchers found that seven themes emerged: emotions, academics, goals, leadership, negative effects, positive effects, and change culture/structure. Future research was suggested to investigate the way in which student-athletes' experiences developed subsequent to a head coaching change.

In their 2011 study on the importance of a coach to an organization, Jowett et al. found that the coach-athlete relationship was important to the overall success of the team and athlete satisfaction. Gallimore and Tharp (2008) highlighted this crucial relationship in a profile on Coach John Wooden that encompassed nearly 30 years of observations. The researchers attended practices, observed individual workouts, and spoke with Coach Wooden. The data were compiled to provide an overall picture and linkage between coaching and teaching. Through their research, Gallimore and Tharp successfully highlighted the importance of the student-athlete-coach relationship and that is critical to the success of a team and to the general success of an individual.

## Methodology

The research sought to explore the phenomenon of the lived experiences of student-athletes who have experienced a head coaching. The implications of such a change are an evolving phenomenon, as they relate to the continued shift of intercollegiate athletics to a business model. To accomplish this goal the investigation used a qualitative case study approach framed with a phenomenological perspective to achieve a rich description. A phenomenological perspective seeks to understand structure and meaning of the lived experience of an individual or a group of persons (Patton, 2002). The characteristics of qualitative research involve an examination of social phenomena by using the researcher as the key instrument in order to produce rich and descriptive data and to analyze that data to identify emergent themes (Creswell, 2007; Slavin, 2007). Case studies involve the collection and organization of data for an in-depth comparison of specific cases (Patton, 2002). Patton (2002) explained two forms of case studies can be used: layered or nested. For this study, a nested case study was utilized, which evaluates a single program (the institution). Within that program, several participants were involved (student-athletes). Patton explained that in a nested case study the analysis begins with the individual cases (student-athletes), followed a cross-case pattern of analysis of each individual case.

The researcher used two sampling techniques. To select the institution participating in the investigation the researcher used a convenience sample. The selected institution is a Division I university located in the southeastern United States. The university's athletic department sponsors 18 sports (10 women's and eight men's). The university has an enrollment of approximately 21,000 students. From 2013 to 2015, four programs (Football, baseball, men's & women's basketball) underwent head coaching changes. To gain an understanding of the perspectives of athletes experiencing the head coaching changes the researcher used a purposeful sampling technique to select male and female athletes to participate in semi-structured interviews. Purposeful sampling allows researchers to access those with first-hand understanding of the phenomenon under investigation (Creswell, 2007).

Upon Institutional Review Board approval, face-to-face semi-structured interviews were conducted during study hall hours at the Athlete Center (AC). The location provided a familiar and convenient setting for those student-athletes who agreed to participate in the study. The interviews took place in a private study hall room, behind closed doors, to protect the anonymity of the participants. In order to be included in the study, participants had to be on the current roster of their respective teams and they had to have experienced a head coaching change during their time on the team. Both male and female student-athletes were included in the study. The sample size was limited to three sports: football (n=3), men's basketball (n=2), and women's basketball (n=3). Table 1 provides a demographic snapshot of participants. With permission of each participant, interviews were digitally recorded and transcribed immediately upon completion. Each in-depth interview lasted approximately 45 minutes.

*Table 1. Summary of Participants*

Participant	Sport	Gender	Race
1	Men's Basketball	Male	Caucasian
2	Women's Basketball	Female	Caucasian

3	Men's Basketball	Male	African American
4	Football	Male	Caucasian
5	Women's Basketball	Female	African American
6	Women's Basketball	Female	African American
7	Football	Male	African American
8	Men's Basketball	Male	Caucasian

### *Data Analysis*

Marshall and Rossman (2011) indicated that the analysis of data is a challenging phase of research and “demands a heightened awareness of the data, a focused attention to those data, and an openness to the subtle, tacit undercurrents of social life” (p. 214). Merriam (1998) stated that “a qualitative design is emergent” (p. 155). Yin (2003) explained qualitative analysis as a holistic analysis of the entire case. Patton added that, once the data has been formally collected, the researcher can organize the data by questions that were generated in the design phase of the study and “insights and interpretations that emerged during data collection” (2002, p. 437).

Each participant served as a separate case study, whereby the researcher systematically gathered in-depth information on each “case of interest” (Patton, 2002, p. 447). Throughout the study, the researcher utilized *inductive analysis* methods, or the process of “discovering patterns, themes, and categories in one’s data” (Patton, 2002, p. 453). Merriam (1998) stated that the “right way to analyze data in a qualitative study is to do it simultaneously with data collection” (p. 162).

Using the constant comparative method of data analysis developed by Glaser and Strauss (1967), a particular event from one of the case study interviews was analyzed and then compared it to an incident in a different interview. Merriam (1998) suggested that the comparisons between incidents can lead to tentative categories in which themes emerge. Merriam suggested the researcher begin by reading each transcript thoroughly and making notes beside the data that are interesting and relevant. The researcher then groups the notes into categories. Subsequent to the analysis of interview transcripts using the aforementioned process, the researcher identified the categories in an attempt to answer the research question: What is the effect of a head coaching change on intercollegiate student-athletes? Throughout the data collection process, the researcher worked to form connections with the participants by listening to their stories, providing assurance of confidentiality, and maintaining a high level of transparency about the reason for the study.

### **Results**

The themes that emerged from the individual phenomenological dialogues were unique to each participant, but also were relatively similar to the group as a whole. The individual descriptions of the participants’ experiences of a head coaching change were analyzed to provide a detailed description of each individual’s experience in an attempt to provide a broader description of the phenomenon.

Three major themes emerged from the dialogues: (1) Student-athletes appear to accept head coaching changes, (2) Head coaches are essential to team success, and (3) The student-athlete-

coach relationship is the core factor of the intercollegiate experience (See Table 2). Although all themes and related sub-themes represented individual experiences, when combined, they created a broader description of the experience of a head coaching change. From a larger perspective, one can infer that the emergent themes outlined the process of experiencing a head coaching change at the intercollegiate level. All participants articulated a metamorphic shift in thinking that began with the shock and anxiety of losing a head coach, followed by a discussion of the coach's importance to the success of the program, thus legitimizing the need for the change. This concluded with comments regarding the importance of a good relationship with the coach, which appeared to be strengthened in times of success.

*Table 2. Summary of Themes and Sub-Themes*

Theme	Sub-themes
1. Theme One: Student-Athletes Appear to Accept Head Coaching Changes	a. Anxiety b. Transferring c. Loyalty and Trust d. Athletics as a Business
2. Head Coaches are Essential to Team Success	a. Leadership/Motivation
3. The Student-Athlete-Coach Relationship	

*Theme One: Student-Athletes Appear to Accept Head Coaching Changes*

In conversations regarding the general stresses of a student-athlete, the participants did not indicate a level of stress in any aspect of their lives, as related to playing their respective sport. Surprisingly, they did not have stress or anxiety about the head coaching change. However, the participants made it clear that, although they were "shocked" and slightly stressed about the individual who would be their eventual head coach, they were not stressed about the change itself.

(a) Sub-theme: Anxiety. Throughout the interviews, a general lack of anxiety was observed for all participants. Anxiety was an important sub-theme; although the participants indicated comparatively low anxiety, they conceded that they imagined "other people" probably would have anxiety about such a change. Though the participants did not specifically identify those as stressors, the researcher was able to recognize that the participants experienced the stress of the unknown through the analysis of the in-depth interviews.

(b) Sub-theme: Transferring. Retention in intercollegiate athletics as it relates to transferring during a coaching transition was not anticipated to emerge as a theme. As the participants currently were on the teams, the assumption was made that they most likely did not have thoughts of transferring. Most indicated they planned to transfer prior to the coaching transition due to disappointment with the performance of the team, which they believed was tied to the performance of the head coach. In comparing intercollegiate athletic programs to businesses, when employees (student-athletes) are unhappy with their working situation, they likely will quit. Upon further probing and questioning of the participants, loyalty to their teammates and to the institution clearly played a major role in their experience with a head coaching change.

(c) Sub-theme: Loyalty and trust. During the dialogue with participants, a strong sense of loyalty and commitment to the institution and to the teammates was observed. When asked the reason they chose not to transfer prior to the head coach transition, most discussed their commitment to the program and the promises between teammates. The women's basketball players indicated they wished to transfer, but they attributed the reason they stayed was due to the promise they made to one another and, in some cases, putting the welfare of the program ahead of their own. The men's basketball players discussed their commitment to the university and the role they continued to play for the team to be successful.

The participants, all of whom experienced a breach in the psychological contract when they were recruited under the promises made by the first coach, appeared to continue their trust and loyalty to the institution and to their teammates. The act of participants reducing their contributions was not evident in this study.

(d) Sub-theme: Athletics as a business. The participants in this study appeared to be aware of their role as "employees" of the programs. When asked about how their feelings regarding the head coaching change, many shrugged it off as a non-issue and a part of the larger picture of the mega-business of intercollegiate athletics. Many were able to separate their personal feelings and to declare that the institution "had to do what it had to do" in order to make money and be successful. Additionally, the participants were not upset that the first head coaches left to pursue better opportunities, citing it that was the "nature of the business."

#### *Theme Two: Head Coaches are Essential to Team Success*

The results of this study indicated that, across the three programs in this study, the period subsequent to the head coach turnover yielded a more successful season in terms of wins and losses. The participants expressed some relief that a coaching change occurred, as well as a trust and hope that the program would improve. Contrary to the research conducted by McQueary, the participants appeared to feel that a change in head coach was ultimately better for their programs and in the seasons following the head coaching changes, all three programs experienced an increase in wins.

Sub-theme: Leadership/Motivation. For the most part, this study supported the findings of Sullivan and Strode (2010) that coaches play a crucial role in a student-athlete's motivation, and the goals set by a head coach promote an environment in which student-athletes can be successful. Relative to the participants in both men's and women's basketball, the head coach set the motivational tone and presented clear and expected steps for success. Additionally, following the head coaching transitions, the coaches displayed more democratic tendencies that led to increased intrinsic motivation among the participants. Thus, the concept of increased intrinsic motivation that was present in this study supported the work of Hollembeak and Amorose (2005) and Greer (2002) as it related to creating an environment in which student-athletes can succeed.

#### *Theme Three: The Student-Athlete-Coach Relationship*

A recurring theme throughout the interviews was the importance of the student-athlete-coach relationship. Each participant attributed any post-head coaching change success to their relationships with the new head coach. The study indicated the importance of coaches and student-athletes knowing one another on a personal level.

The participants spoke at length about the importance of the head coach believing in them. Two of the men's basketball players were injured during the transition of head coaches and attributed their longevity and commitment to the program to the solid relationship with their head coach. The women's basketball players had experienced several disappointing seasons prior to the transition of head coaches and considered transferring during the transition but chose to give Coach B a try. Had it not been for the passion and commitment of Coach B, the participants admitted they would have left the program. They expressed that the high expectations, clear goals, and personal commitment of the new coaches were impactful factors.

The two football players expressed a level of amotivation, or the absence of motivation, during the year that Coach B was with the program. One of the football players shared stories about the continual put-downs and negative vocabulary that Coach B exhibited. The work of Turman (2006) supported the lower levels of motivation felt by the football players and further solidified the possibility that a greater impact would have occurred if Coach B had remained at the institution for longer than one year. They also experienced two head coaching changes during their time with the program. Their connection to, and relationship with, the head coach was not as impactful as the athlete-coach relationships of the basketball players. Wells and Peachey (2011) asserted that voluntary turnover in an organization can be detrimental and can cause dysfunction. Both Coach A and Coach B voluntarily left the football program. Essentially, the two football participants experienced a voluntary head coaching change every year they were with the program. In contrast, both the men's and women's basketball teams experienced an involuntary head coach turnover when coaches were dismissed from the program due to underperformance. The athlete-coach relationship of the men's and women's basketball had a significant impact on the overall experience of the participants.

## **Discussion**

At the intercollegiate level, understanding the effect of a change in the leadership of a head coach has many implications on program success, support services, and hiring practices (Schoppmeyer, 2004). The findings of this study revealed that the participants experienced many feelings that were meaningful, but these feelings did not appear to impact their motivation and perception of the program. The three themes that emerged from this study indicated student-athletes appear to accept head coaching changes, head coaches are essential to team success, and the student-athlete-coach relationship is critical. These themes identify the need for programming and additional research to determine the ways in which to better support student-athletes and the new head coach to achieve a positive environment. In the evolving business of intercollegiate athletics, an expeditious and efficient coaching transition is necessary. These findings may be useful for other programs experiencing a head coaching change.

The focus of this study was to examine the effects of a head coaching change, but implications of such a change are applicable in all organizations. When a turnover occurs in an organization, a need exists for support programming and mentoring for both student-athletes and the new coaching staff in order to develop or maintain a productive environment. Perhaps information in this study could be used to develop programming at all levels of an organization, not solely athletic programs, to aid in the transition of leadership.

### **Implications for Practice and Future Research**

Administrators, coaches, and support staff certainly can use this information to provide improved programming for student-athletes who experience such a change. As Kennedy (2007) stated, the athletic departments, along with the NCAA, are continuing to develop programs to help student-athletes become successful in many areas. The participants in this study indicated that, at the time of the coaching transition, the athletic administration excluded them in discussions regarding a new head coach. Perhaps in the future, student-athletes can aid the athletic programs by providing information about team dynamics, the current climate of the locker room, and other variables that could help with the selection of a head coach. As the new coach would be joining an already established team with understood social norms and behaviors, input from the student-athletes may be beneficial.

Future studies examining the perspective of the new head coach could yield valuable information regarding the transition from the leadership point of view. New head coaches join an already established social environment with understood norms and behaviors. As examination of the transition from that perspective, in conjunction with the data from this study, could provide richer description of the phenomenon. To address the phenomenon of a head coaching change, as it relates to specific sports and genders, would be of interest. The participants in this study were three females and five males in three major sports. The data was not analyzed with gender in mind, but the concept is plausible that different feelings, emotions, and impacts may be present.

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**(Peer Review Article)****A Professional Book Review of Brené Brown's *Braving the Wilderness***

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**Introduction**

In *Braving the Wilderness*, Brené Brown (2015) explores and explains how true belonging is discovered and maintained throughout one's life. Brown uses Maya Angelou's quote on belonging to create the BRAVING model, "You are only free when you realize you belong no place – you belong every place – no place at all. The price is high. The reward is great" (Brown, 2017, p. 5). Brown explains this idea of belonging everywhere and nowhere as truly belonging to oneself and connects it with true self-trust. The BRAVING model is described as follows: (1) Boundaries: the creation and maintenance of them with others and with oneself; (2) Reliability: being aware of competencies and respecting limitations; (3) Accountability: recognizing mistakes and providing apologies; (4) Vault: protecting confidences; (5) Integrity: choosing what is right over what is easy and practicing one's own values; (6) Nonjudgment: withholding one's opinions from others' needs; and (7) Generosity: permitting room for kind interpretation of other's intentions and actions. When connected with each other, these seven traits can be translated into action. Anyone who chooses to brave the wilderness, seeking true belonging, will perform these actions and find they belong to themselves, not to others. They will understand that they no longer need the approval of others to feel complete or validated in their own sense of being. They will understand what Angelou meant in the high price of their action and the great reward they find from their choices.

**Chapter Summaries of the Book**

To better understand the BRAVING model, Brown uses the remaining chapters of the book to explain the objectives that enhance the actions. In the chapter "People are hard to hate close up. Move in," Brown discusses the importance of embracing humanity in every single person. The author connects experiencing pain with true vulnerability and explains that without identifying with the vulnerability of oneself and others, people will continue to use dehumanizing language to deepen the chasm that separates each other during conflict and will never discover the courage and power that are born from pain. In the chapter "Speak truth to bullshit. Be civil," Brown examines words as potential weapons to further the chasm between people, either by forcing them to choose arbitrary sides in an argument or by refusing to create genuine connection with others through sarcasm or fabricated information. In "Hold hands. With strangers," Brown encourages readers to celebrate each other's joy and lament each other's pain together. By doing so, humankind is reunited into true belonging as a collective. Refusing to do so only strengthens loneliness, which research finds is as dangerous to health as smoking or obesity (Brown, 2017, p. 141). The last chapter is called "Hard Back. Soft front. Wild heart," where Brown leaves readers with the idea that vulnerability and courage will sustain them through the wilderness of true belonging, and that wilderness will forever remain in their heart.

## **Practical Implications**

With emphases on education about vulnerability, shame, belonging, and real connection with others, Brené Brown uses her research to educate leaders from any field. From the perspective of student leadership professionals, this book illuminates the importance of creating safe spaces to be vulnerable and share ideas, speak truths, and create solutions to universal problems for student workers, patrons, professional leaders, and anyone else involved with the program. By encouraging others to brave the wilderness of standing alone in their beliefs, leaders in student development will have more success in the future of innovations and mentorships, giving students the tools needed to be successful after graduation. However, student development is not the only profession that would benefit from this read. Any organization, group, team, class, or individual who wants to find themselves more at ease with facing confrontation with confidence and grace would find this book a valuable resource. Anyone who feels like they do not belong anywhere but want to discover how they can belong to themselves would benefit from this book. Leaders and those who are not quite yet leaders would benefit from reading this book.

Brown gives more than tools or mental tricks to find where one truly belongs. Through vast amounts of research and self-reflection, Brown provides readers with someone with whom they can identify, because she too knows what it feels like to not belong somewhere, when “belonging is so primal” (Brown, 2017, p. 151). Her interviews with others who have explored their own wildernesses provide insights that address various concerns of today. Her talk with Jen Hatmaker on braving the wilderness resulted in Hatmaker stating, “Discomfort is the great deterrent of our generation” (Brown, 2017, p. 151). From Dr. Roshi Halifax, Brown learned “the inhale is absolutely essential if you want to continue to exhale” (Brown, 2017, 148). The book contains countless other gems of wisdom and inspiration readers can use to make their own changes to the way they interact with others or themselves, making it easier to brave the wilderness one step at a time.

Within her chapters, Brown organizes this book using anecdotes, interviews, and digested research. Brown engages her readers by writing to them in conversational prose, challenging their preconceived notions with her research-based opinions. Brown begins the book with an introduction into the need for the wilderness of standing alone, where the idea for the wilderness came from, and other background information leading to the chapters on how to brave the wilderness. Throughout those four main chapters, Brown combines short discussions on politics, personal experiences, interviews with inspiring individuals, and research she has collected herself and found from others. While the writing style may not appeal to all audiences, the honesty, ingenuity, and emotion Brown writes with makes the book a piece that readers can connect to with their own humanity and learn from. It can be difficult to read if the audience is not open-minded and willing to contest what they believe.

## **Conclusions**

This book challenges what society says is true: belonging to a group equals real worth. Brown’s goal is to convince readers of the importance of belonging to oneself. In the world of student

development, teaching students to belong to themselves is vital. Students who belong to themselves possess the confidence it takes to stand up for what they believe in; they are the individuals who search for truth in social interactions or challenge what they learn in class. Students who belong to themselves mentor the next generation to do the same and accept nothing less as their reality. Students who belong to themselves invest in their futures while enjoying the present, engaging with the world around them in a wholesome, constructive way. They can affect all areas of a university through their classes, academic departments, ancillary departments, and student-led organizations.

This book can generate the same affect for the sports, recreation, and parks professions. Professionals in these fields exist in a world that is rooted in tradition, yet they constantly evolve to match pace with the next generation and their personalized needs. This dichotomy calls for these leaders looking to create new solutions and innovate existing methods of programming as complications arise.

*Braving the Wilderness* highlights other works by Brené Brown that other readers should explore if they enjoy this book. Because Brown conducts her own research and uses the findings as support for her work, other books like *Daring Greatly* and *Rising Strong* could also offer readers further insight into what it means to brave the wilderness and find true belonging. Brown has also recorded seminars, Ted Talks, and interviews where she personally explains her research and relates it to other aspects of life. In these Brown explores concepts like vulnerability, shame, self-worth, and professional culture. Princeton University referenced the questions pertaining professional culture in their remodel of Outdoor Action leadership trainings and pairing structure for their freshman orientation trips during a NIRSA 2018 conference session, illustrating how practical Brown's research is to the realm of recreation. Actress Kristen Bell has hosted Brown on her Youtube show "Momsplaining." Brown's work is relevant for leaders of any organization and anyone looking to find true belonging.

Brown best summarizes her research and understanding of true belonging in this sentence: "You will always belong anywhere you show up as yourself and talk about yourself and your work in a real way" (Brown, 2017, p. 26). Leaders anywhere will learn they are strong enough to brave the wilderness and help others on their own journeys.

**Reference**

Brown, B. (2017). *Braving the wilderness: The quest for true belonging and the courage to stand alone*. New York City, NY: Random House.



**(Peer Review Article)****An Analysis on the Impact of OSHA's Methylene Chloride Standard**

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**Abstract**

**Objectives:** Methylene chloride is a chemical widely used in a variety of industries. Exposure to this dangerous chemical increases the risk of cancer, cardiovascular, central nervous system and liver disease. The methylene chloride standard was enacted in 1997. This study estimates the effect of the standard on employee methylene chloride exposure.

**Study Design:** OSHA datasets covering all enforcement cases from 1970 to present, including employee personal sampling results for methylene chloride, were analyzed in this study.

**Methods:** The SAS 9.3 statistical program was used in analysis. Descriptive statistics, and a logistic regression were used to test the effect of the methylene chloride standard on employee exposure.

**Results:** A calendar year-adjusted logistic regression model [ $X^2(2, 10892) = 110.36, p < 0.0001$ ] indicated that, after 1997, U.S. employees had lower odds of being at or above the permissible exposure limit (PEL) (OR = 0.45; CI 0.39, 0.53) for methylene chloride.

**Conclusions:** Consistent results indicating that the standard has measurable effect by significantly decreasing exposure to methylene chloride.

**Introduction and Background**

Since the creation of the Occupational Safety and Health Administration (OSHA) in the United States, injury, illnesses, and fatality rates have dramatically decreased. The effectiveness of OSHA inspections and standards, however, are still called into question (Gary & Mendeloff, 2005).

OSHA was created in 1970, promulgating standards which promote a safe working environment. OSHA has created 31 substance specific standards involving 42 chemicals, including the 1997 methylene chloride standard (Oleinick, 2014).

Methylene chloride, a clear, colorless, and volatile chlorinated solvent, is predominantly used as a cleaner and paint stripper in industrial settings or among auto body repair technicians (Cooper, Scott, & Bale, 2011). It is a toxic chemical which caused eleven deaths among bathtub refinishers from 2000-2011 (Cooper et al., 2011). The National Institute for Occupational Safety and Health (NIOSH) estimates that approximately one million workers may be exposed to methylene chloride per year (ATSDR, 2000).

On January 10, 1997 OSHA published the methylene chloride vertical standard (i.e. 29 CFR 1910.1052; 29 CFR 1926.1152; and 29 CFR 1815.1052) which applies to general, construction and shipyard industries respectively, in the *Federal Register*. Vertical standards enacted by OSHA only apply to specific industries. In this standard, OSHA set regulations for preventing overexposure to

persons utilizing methylene chloride. OSHA reduced the methylene chloride permissible exposure limit – time weighted average (PEL-TWA) from 500 ppm (parts per million) to 25 ppm and established a short term exposure limit (STEL) of 125 ppm (Roelofs & Ellenbecker, 2003). Along with the established exposure limits, OSHA also required employers to monitor exposure, train workers, use engineering controls, designate restricted areas, conduct medical surveillance, and implement control and leak prevention (Roelofs & Ellenbecker, 2003; Zarrabeitia, Ortega, Altuzarra, Martinez, Mazarrasa, & Calvet, 2001).

According to NIOSH (National Institute for Occupational Safety and Health), concentrations of 800 ppm can disturb psychomotor performance. Concentrations of 2,300 ppm are considered to be immediately dangerous to life and health (IDLH) (Hoffer, Tabak, Shcherb, Wiener, & Bentur, 2005). Uang and colleagues (2006) conducted sampling for methylene chloride during operations at three aircraft paint stripping and spraying workplaces. They utilized charcoal tubes to monitor worker exposure to methylene chloride at four different areas around aircraft: on the ground; by the right wing; by the left wing; and by the nose area. The sampling results indicated that the average ground exposure to methylene chloride was 42.01 ppm, which is higher than the OSHA-PEL at 25 ppm. The other samples taken during this study were 23.44 ppm at the right wing, 20.41 ppm at the left wing, and 21.60 on the nose area, which were above the action level, but did not extend past the OSHA-PEL (Uang, Shih, Chang, C., Chang, S., Tsai, & Deshpande, 2006).

#### Toxicological and Carcinogenic Effects of Methylene Chloride

Due to methylene chloride's high volatility, exposure to the solvent mainly occurs through inhalation, but can also be ingested and absorbed dermally (Hoffer et al., 2005; MacIsaac, Harrison, Krishnaswami, McNary, Suchard, Boysen-Osborn, Cieplich, Styles, & Shusterman, 2013; Schlosser, Bale, Gibbons, Wilkins, & Cooper, 2015). According to the US EPA (Environmental Protection Agency) Toxic Release Inventory, 3.4 million pounds of methylene chloride were released into the environment in the United States in 2015.

Methylene chloride, a likely carcinogen to humans, is known to adversely impact the central nervous and hepatic systems. The reaction to methylene chloride is similar to the reaction of other chlorinated solvents with effects such as decreased motor activity, impaired memory, changes in sensory stimuli, and other neurological disorders (Schlosser et al., 2015). A case study report illustrated the effects of six patients with oral methylene chloride poisoning causing symptoms of dizziness, psychomotor and sensory function impairment, amnesia, confusion, and loss of consciousness (Chang, Yang, Deng, Ger, Tsai, Wu, Liaw, H. & Liaw, S., 1999). A study by Lash and colleagues (1991) on retired aircraft maintenance workers reported that methylene chloride exposure causes chronic health effects, such as loss of motor function and problems with learning and memory (Schlosser et al., 2015).

Two pathways are crucial in the metabolism of the methylene chloride. The cytochrome P450 pathway breaks down the methylene chloride at low concentrations and metabolizes the methylene chloride into carbon monoxide, which binds to hemoglobin in the blood to form carboxyhemoglobin (David, Clewell, Gentry, Covington, Morgott, & Marino, 2006). When the

dose of methylene chloride is increased, the low affinity and high capacity glutathione S-transferase pathway becomes the lead metabolizer in the body (David et al., 2006). Methylene chloride exposure has been known to raise the carboxyhemoglobin levels, or the levels of carbon monoxide, found in the blood by 13-16%, and sometimes as high as 50% in animals and in humans (MacIsaac et al., 2013). High carboxyhemoglobin levels in the blood due to methylene chloride may cause angina, dysrhythmia, or death and can be lethal to persons with already known cardio-pulmonary disorders, females who are pregnant, and smokers (Hoffer et al., 2005; MacIsaac et al., 2013).

Major concerns over methylene chloride being a carcinogen arose in the 1980s, when a two-year inhalation exposure experiment was conducted by the National Toxicology Program (NTP). NTP tested high concentrations of methylene chloride on mice and determined that the lungs and the liver are the two areas that are susceptible to cancer due to inhalation exposure (Cooper et al., 2011; David et al., 2006; NTP, 1986). Human studies have shown a higher association to cancer than the cases of mice in the NTP study. Human studies associated methylene chloride occupational exposure to brain cancer, liver cancer, biliary tract cancer, non-Hodgkin Lymphoma, and multiple melanomas (Schlosser et al., 2015). OSHA, the EPA, and the International Agency for Research on Cancer (IARC) have all defined methylene chloride as a prospective carcinogen (Roelofs & Ellenbecker, 2003). Methylene chloride has been confirmed as an animal carcinogen, but causal evidence is needed to determine the carcinogenicity of methylene chloride in humans (Hoffer et al., 2005). The EPA and the IARC determined that methylene chloride is “likely to be carcinogenic to humans,” or group 2B, from the evidence formed by testing on the mice and due to a link in association between methylene chloride exposure and brain, liver, and hematopoietic cancers in humans (Schlosser et al., 2015; Liu et al., 2013).

An additional area of concern regarding methylene chloride exposure is liver damage. Through testing on rodents, hepatic effects are mainly observed from inhalation and ingestion exposure to methylene chloride (Burek, Nitschke, Bell, Wackerle, Childs, Beyer, Dittenber, Rampy, & McKenna, 1984). Other animal studies found that methylene chloride exposure starting at 500 ppm caused changes in certain areas in the livers of animals, such as in the liver foci, the fatty liver (steatosis), along with necrosis (Nitschke, Burek, Bell, Kociba, Rampy, & McKenna, 1988). Human studies conducted did not provide substantial data to determine that methylene chloride exposure caused hepatic damage (Schlosser et al., 2015).

The purpose of this study was to examine the effect of the enactment of Occupational Safety Health Administration’s methylene chloride vertical standard (29 CFR 1910.1052: which also covers 1915 and 1926) on employee exposure to methylene chloride. We hypothesized that the vertical standard for methylene chloride is associated with decreased odds of employees meeting or exceeding the OSHA Permissible Exposure Limit for methylene chloride.

## **Methods**

### *OSHA Datasets*

The Freedom of Information Act (FOIA) provides that any person has the right to request access to federal agency records or information. Like all federal agencies, The U.S. Department of Labor (DOL) is required to disclose records requested in writing by any person. However, agencies may withhold information pursuant to the nine exemptions and three statutory exclusions contained in the statute. FOIA applies only to federal agencies and does not create a right of access to records held by Congress, the courts, or by state or local government agencies. The datasets for use in this project are the US DOL FOIA datasets.

The dataset website aims to make the enforcement data, collected by these agencies in the US DOL accessible. The OSHA dataset consists of inspection case detail for approximately 100,000 OSHA inspections conducted annually. The datasets include information regarding the reason for opening the inspection, and details on citations and penalty assessments resulting from violations of OSHA standards. Additionally, accident investigation information is provided, including textual descriptions of the accident, and details regarding the injuries and fatalities which occurred. These datasets are updated daily. OSHA also provides industrial hygiene sample data collected as part of its compliance monitoring program. The Methylene Chloride sampling results represent compliance inspection personal sample results from 1984 to 2017.

The dataset included the following variables: Standard (vertical standard for Methylene Chloride enacted, 1 = Yes, 0 = No); Outcome=  $PEL_{(0,1)}$ : Greater than or equal to the Permissible Exposure Limit (1=Yes, 0 = No); and Year = calendar year the inspection was opened.

### *Statistical Analysis*

SAS 9.3 (SAS Institute, Cary, NC), a statistical software program that is used to perform statistical data analysis was used to take applicable data sets from OSHA, organize and analyze them. Descriptive analysis was performed as the comparative means of continuous variables as well as the comparative frequencies of categorical variables. Logistic regression was performed on the saturated model to explain the relationship between the enactment of a vertical OSHA standard on methylene chloride and whether or not employees sampled in inspections were below the PEL. In addition, there was a covariate to adjust for the opening year of inspection. Year of inspection was included to compare exposure outcomes pre- and post-vertical standard implementation. Backward elimination was performed on the saturated model starting with the saturated model below using an *a priori* alpha level of 0.05 in order to control for Type I error (false-positives). The Shieh-O'Brien approximation for model power indicated a 99.9 % certainty of detecting significant effects, which controlled for type II error (false-negatives).

### **Final Model**

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$$\text{Logit } P(X) = \alpha + \beta_1(\text{Vertical Standard}) + \beta_2(\text{Year}) + \varepsilon$$

Or alternatively,

$$\text{Logit } P(X) = (1/(1+e^{-(\alpha + \beta_1(\text{Vertical Standard}) + \beta_2(\text{Year}) + \varepsilon)}))$$

- Outcome =  $PEL_{(0,1)}$ : equal to or greater than the Permissible Exposure Limit.  
(1 = Yes, 0 = No)
- Standard = Vertical Standard for Methylene Chloride Enacted.  
(1 = Yes, 0 = No)

- Year = The Year that the Inspection was Opened.  
Continuous covariate adjustment.
- $\alpha$  = Intercept constant.
- $\varepsilon$  = Represents error term, also known as unexplained variance, or the residuals in the model.

## Results

As shown in Table 1, the mean personal sample results for methylene chloride were ( $x = 91.78$ ,  $N = 8,569$ ) before the standard was enacted. In comparison, Table 2 shows the mean personal sample results for methylene chloride were ( $x = 87.24$ ,  $N = 5,439$ ) after the standard was enacted. For these reasons, further investigation with hypothesis testing may be warranted to determine if these differences are significant.

*Table 1: Methylene Chloride Sampling Results with Vertical Standard Not in Effect*

Variable	N	Mean	Minimum	Maximum
Sampling Results	8,569	91.78	0.00	12,291.00
Log10 (Sampling Results)	5,631	1.50	-2.46	4.09

*Table 2: Methylene Chloride Sampling Results with Vertical Standard in Effect*

Variable	N	Mean	Minimum	Maximum
Sampling Results	5,439	87.24	0.00	6,682.56
Log10 (Sampling Results)	4,267	1.41	-1.83	3.82

The overall adjusted logistic regression model was significant [ $X^2(2, 10892) = 110.36$ ,  $p < 0.0001$ ]. The parameter estimate, shown in Table 3, for year indicated a downward slope for the odds of meeting or exceeding the PEL. This slope was  $-0.05$  for each passing calendar year ( $p < 0.0001$ ), since year is a continuous variable. The odds ratio for each calendar year is determined by the following equation:

$$e^{-0.05(\text{number of elapsed years from 1984})} = \text{calendar year's odds ratio estimate}$$

The parameter estimate for enactment of the vertical standard indicated a decrease in the odds of meeting or exceeding the PEL. This decrease was  $-0.40$ , if the standard was enacted ( $p < 0.0001$ ), since vertical standard is a dichotomous variable. The odds ratio for the vertical standard effect is determined by the following equation:

$$e^{-0.4} = \text{vertical standard's odds ratio estimate}$$

*Table 3: Parameter Estimates and 95% Confidence Intervals*

Effect	Parameter Estimate	Standard Error	Wald Chi-Square	p-value	Lower Confidence Limit	Upper Confidence Limit
Intercept	101.7	10.41	95.51	<.0001	81.35	122.2

Vertical Standard (No = 0, Yes = 1)	-0.40	0.04	108.67	<.0001	-0.47	-0.32
Opening Year	-0.05	0.01	96.35	<.0001	-0.06	-0.04

Based on the previous paragraph's equations, Table 4 illustrates the odds ratio estimates for the two independent variables in the model. The calendar year-adjusted logistic regression model indicated that, after 1997 (post vertical standard implementation), employees had lower odds of being at or above the PEL (OR = 0.45; CI 0.39, 0.53). In addition, for each passing year the employees had lower odds of being at or above the PEL (OR = 0.95; CI 0.94, 0.96).

*Table 4: Odds Ratio Estimates and 95% Confidence Intervals*

Effect	Odds Ratio Estimate	Lower Confidence Limit	Upper Confidence Limit
Vertical Standard (No = 0, Yes = 1)	0.45	0.39	0.53
Opening Year	0.95	0.94	0.96

## Discussion

This study aimed to find an association between the methylene chloride vertical standard and employee exposure to methylene chloride. The analysis results indicate that with an increase in enforcement of the methylene chloride standard came a decrease in worker exposure to methylene chloride. The results show the mean personal samples for methylene chloride exposure were higher before the standard was enacted. Along with personal samples being higher, more methylene chloride samples were greater than or equal to the PEL before the standard was enacted as well. The logistic model was significant ( $p < 0.0001$ ). The model indicated that the odds of exposure to methylene chloride was greater than or equal to the PEL decreased with the enactment of the vertical standard, as well as decreasing over time.

There are several strengths of this study. The OSHA dataset used in this study provided a large sample size, which raised statistical power. Also, all methylene chloride cases from the OSHA dataset were included in statistical analyses which reduces selection bias.

### *Information for Practitioners*

Although the findings of this study suggest decreased methylene chloride exposure among employees following implementation of the vertical methylene chloride standard, it is important that employers continue to safeguard employees against potential methylene chloride exposure. First, employers should be knowledgeable of products used at their jobs site containing methylene chloride. Methylene chloride is present in products used for remodeling homes, such as:

degreasers; paint strippers, adhesive thinners, and metal cleaners. Methylene chloride is also an ingredient in household products. For example, spray paints, shoe polish, water repellants, and spot removers contain methylene chloride (Borck, 2013).

Second, employers should follow requirements set forth by the United States Occupational Health and Safety Administration (OSHA) regarding methylene chloride use in the workplace. OSHA requires employers to monitor for methylene chloride in the workplace and provide training for employees at risk for methylene chloride exposure (Borck, 2013). OSHA also requires employers to use controls to prevent the accumulation of methylene chloride vapors in the workplace. Controls can include source reduction, mechanical ventilation, revising administrative practices (i.e. not spraying methylene chloride or using tools to distance employee from exposure), and implementation of personal protective equipment plan and utilization (Borck, 2013).

### **Conclusion**

After the creation of OSHA in 1970, standards were introduced that helped provide a safer working environment. The methylene chloride standard was enacted in 1997 due to high toxicity levels of methylene chloride and the number of people that were affected by methylene chloride in the workplace. Methylene chloride is a possible carcinogen, and has known adverse health effects in the central nervous system, the liver, and the blood. Other acute signs and symptoms range from eye and skin irritation to dizziness and nausea. The main methods for protecting workers from methylene chloride exposure is engineering controls, administration controls, and personal protective equipment. No previous studies have been conducted that determine the effectiveness of the methylene chloride standard. This study notes a significant relationship between the methylene chloride vertical standard and a decrease in PEL exposure for employees. These results support the effectiveness of the methylene chloride standard. Future studies should examine other OSHA standards to provide support for the effectiveness of OSHA in protecting occupational workers.

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**(Peer Review Article)****Can Physical Activity Serve as a Geographical and Financially Accessible Treatment Method for Anorexia Nervosa?***Christian Goodyear, MS, University of Louisville**Kristi King, PhD, CHES, University of Louisville***Introduction: Eating Disorders, Definitions, and Prevalence**

Eating disorders have long since had historical significance, with first documentation dating back to the 12<sup>th</sup> century, gaining prevalence in the late 20<sup>th</sup> century (Deans, 2011). An eating disorder is defined as a detrimental shift in an individual's eating behavior [National Eating Disorders Association (NEDA), 2019; National Institute of Mental Health (NIMH), 2019]. An estimated 30 million Americans currently suffer from an eating disorder [National Association of Anorexia Nervosa and Associated Disorders (ANAD), 2019]. The three most common clinically recognized eating disorders are anorexia nervosa, bulimia nervosa, and binge eating disorder (See Table 1; NIMH, 2019). The average onset of these psychological disorders is 18 years old for anorexia nervosa and bulimia nervosa and 21 years old for binge eating disorder (Hudson, 2007).

*Table 1. National Institute of Mental Health (NIMH) Definitions for Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder*

Disorder	Definition
Anorexia Nervosa	<ul style="list-style-type: none"> <li>Characterized by a significant and persistent reduction in food intake leading to extremely low body weight in the context of age, sex, and physical health; a relentless pursuit of thinness; a distortion of body image and intense fear of gaining weight; and extremely disturbed eating behavior.</li> <li>Many people with anorexia see themselves as overweight, even when they are starved or severely malnourished (NIMN)</li> </ul>
Bulimia Nervosa	<ul style="list-style-type: none"> <li>Characterized by binge eating (eating large amounts of food in a short time, along with the sense of a loss of control) followed by a type of behavior that compensates for the binge, such as purging (e.g., vomiting, excessive use of laxatives, or diuretics), fasting, and/or excessive exercise.</li> <li>Unlike anorexia nervosa, people with bulimia can fall within the normal range for their weight.</li> <li>But like people with anorexia, they often fear gaining weight, want desperately to lose weight, and are intensely unhappy with their body size and shape.</li> </ul>
Binge Eating Disorder	<ul style="list-style-type: none"> <li>Characterized by recurrent binge eating episodes during which a person feels a loss of control and marked distress over his or her eating.</li> <li>Unlike bulimia nervosa, binge eating episodes are not followed by purging, excessive exercise or fasting.</li> </ul>

	<ul style="list-style-type: none"> <li>As a result, people with binge eating disorder often are overweight or obese.</li> </ul>
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A nationwide study surveying high school students showed 31.5% of participants described themselves as slightly or very overweight, and 47.1% of students were trying to lose weight [See Figure 1; Youth Risk Behavior Survey (YRBS) 2019 Standard Questionnaire Item Rationale, 2019]. While overweight and obesity are prevalent, care must be exercised when educating children about healthy weight. Eating disorders can be overlooked or even triggered, when an emphasis is placed on health outcomes (e.g. obesity) versus health behaviors (e.g. physical activity).



Figure 1. Ecological Model with Examples of Treatment Methods for Anorexia Nervosa

Anorexia nervosa has the highest mortality rate out of any psychological disorder (Hamilton, Culler, Elenback & Ekern, 2018). A meta-analysis of 36 studies observed patients diagnosed with anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified, assessing the mortality rates of each. Data for person-years-lived was collected with results of 166,642; 32,798; and 22,644 respectively. Anorexia nervosa had a mortality ratio of 5.86 per 1,000 person-years (Arcelus, Mitchell, Wales & Nielson, 2011; ANAD, 2019). Comparatively, bulimia nervosa reported 1.93 per 1,000 person-years, and eating disorder not otherwise specified with a rate of 1.92 per 1,000 person-years (Arcelus, Mitchell, Wales & Nielsen, 2011). Findings affirm the seriousness of all eating disorders, but especially anorexia nervosa.

The lifetime prevalence of anorexia nervosa in adults was 0.6%. This disorder, while present in all genders, sexes, races, ethnicities, ages, and socioeconomic groups (NEDA, 2019), has a higher occurrence in gender presenting women than gender presenting men (Office on Women's Health, 2018), 0.9% and 0.3% respectively (Austin, Ziyadeh, Forman, Prokop, Keliher & Jacobs, 2008; ANAD, 2019). Out of all diagnosed cases, gender presenting men make up 5-15% of the anorexia nervosa population (NIMH, 2019). Amongst the transgender college student population, a self-reported 16% developed an eating disorder, not specific to a certain gender presentation (ANAD, 2019). In women of different race, there was no statistically significant difference in diagnostic rates; while African, Asian, and Latino men reportedly had a higher incidence compared to Caucasian men (Austin et al., 2008).

Historically, anorexia nervosa has been deemed a contraindication to physical activity. As seen in Table 2, this population commonly utilizes physical activity as a means to lose additional weight. However, recent research has started to consider that physical activity may provide health benefits in the anorexia nervosa population. While each of the aforementioned eating disorders are serious medical illnesses marked by severe disturbances to a person's eating behaviors, the focus of this literature review will be to explore anorexia nervosa and the financial and geographical benefits of using physical activity as a treatment method.

*Table 2. Non-comprehensive emotional and behavioral and physical signs of Anorexia Nervosa*

Emotional and Behavioral Signs	Physical Signs
<ul style="list-style-type: none"> <li>• Cramping and pain of the abdomen</li> <li>• Lack of mental cognition and concentration</li> <li>• Metabolic syndrome and dysfunctions</li> <li>• Bradycardia</li> <li>• Dizziness or syncope</li> <li>• Lowered body temperature</li> <li>• Increased body hair growth</li> <li>• Hindered sleeping patterns</li> <li>• Irregular or stopped menstrual periods</li> <li>• Dental decay or discoloration</li> <li>• Dry skin and hair</li> <li>• Muscle weakness and atrophy</li> <li>• Vital organ contusion</li> <li>• Superficial spinal contusion</li> <li>• Abnormal hematocrit</li> <li>• Osteopenia or osteoporosis</li> </ul>	<ul style="list-style-type: none"> <li>• Dramatic weight loss</li> <li>• Dressing in layers</li> <li>• Calorie counting or in-depth food diary</li> <li>• Restricting food or calorie intake</li> <li>• Body dysmorphia</li> <li>• Persistent positive or negative ideological commenting on body</li> <li>• Denial of hunger and weight loss</li> <li>• Avoiding situations where they will be confronted with food</li> <li>• Obsessing over scale weight</li> <li>• Self-harming comorbidities</li> <li>• Excessive exercise with intent to progress unhealthy weight loss</li> </ul>

## **Diagnostic Criteria for Anorexia Nervosa**

Anorexia nervosa is a psychological disorder that is often difficult to diagnose due to the individual's denial of their weight loss, declining health, and refusal to seek treatment (NIMH, 2018). All currently recognized psychological disorders' diagnostic criteria are recorded in the "American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition" (DSM-5), (American Psychiatric Association, 2013). The criteria, as defined by the DSM-5: persistent caloric energy restriction with intent to significantly lower body weight, intense fear of weight gain or obesity that clinically alters nutritional and physical behavior, altered perception of body appearance termed body dysmorphia. Stated by the DSM-5, clinical diagnosis does not require certain symptoms to be present, as it is left up to a trained health professional's discretion. Further, about half of anorexia patients have comorbid anxiety disorders, including obsessive-compulsive disorder and social phobia (Ulfvebrand, Birgegard, Norring, Hogdahl, & von Hausswolff-Juhlin, 2015).

## **Symptoms, Signs, and Indicators of Anorexia Nervosa**

People with anorexia nervosa avoid food, severely restrict food, or eat very small quantities of only certain foods. Even when they are dangerously underweight, they may see themselves as overweight. They may also weigh themselves repeatedly. There are two subtypes of anorexia nervosa: a restrictive subtype and binge-purge subtype (Cline, 2016). People with the restrictive subtype of anorexia nervosa place severe restrictions on the amount and type of food they consume. People with the binge-purge subtype of anorexia nervosa also place severe restrictions on the amount and type of food they consume, but additionally display binge eating and purging behaviors (such as vomiting, use of laxatives and diuretics, etc.) (Cline, 2016). There are numerous immediate and long-term indicators and effects of anorexia nervosa that can be separated into two primary sects: emotional and behavioral symptoms, and physical symptoms. Individuals can present different signs and symptoms and are not limited to a specific list. Any action the individual takes to lose weight is clinically relevant. See Table 2 for a non-comprehensive list of emotional and behavioral signs and physical signs of anorexia nervosa (NIMH, 2019; Hamilton, Culler, Elenback & Ekern, 2018; Cline, 2016).

## **Current Treatment Methods**

With such a diversity of symptomatic presentations and psychological comorbidities an individual with anorexia nervosa may face, treatment plans must be tailored to the individual's specific needs. Additionally, utilizing a single treatment method is generally not appropriate. Rather, a comprehensive intervention will be put in place to address all issues (Cleveland Clinic, 2019). The most common forms of treatment are cognitive behavioral psychotherapy, nutrition counseling, medicinal intervention, medically supervised and/or induced weight restoration, group therapy, inpatient and/or residential facility admission (NEDA, 2019; Psych Guides, 2019). See Table 3 for examples of each of these treatment methods. There is no standard one-size-fits-all approach to treating psychological disorders. Therefore, a comprehensive treatment program using multiple methods may be necessary.

*Table 3. Most Common Forms of Treatment for Anorexia Nervosa and Examples*

Cognitive behavioral psychotherapy	A form of one-on-one counseling that works to change the faulty and harmful thought processes that facilitate anorexic symptoms. Effort is made by the health professional to instill positive coping mechanisms that can enable the patient to gain an understanding of their triggers, avoid harmful situations, and to reinforce their self-confidence and self-efficacy (Society of Clinical Psychology, 2019).
Nutrition counseling	A necessary education tool that works to teach the individual the importance of a balanced diet, appropriate eating patterns, and nutritionally driven weight regulation (Cleveland Clinic, 2019).
Medicinal intervention	While there are no medications that specifically address anorexia, antidepressants and antipsychotics are commonly used to address the underlying causes and symptoms that contribute to the disorder (Harvard Health Publishing, 2009).
Medically supervised and/or induced weight restoration	Medically supervised and/or induced weight restoration comes in different forms. Cognitive behavioral psychotherapy, nutrition counseling, and oral caloric intake monitoring can all be effective methods. When medically necessary, for instances where patients are critically underweight or refuse to eat, nasogastric tube feeding will be used. This form of weight restoration involves inserting a tube through the nasal passageway, down the esophagus, and into the stomach. Through this tube, a liquid diet will be delivered directly to the stomach to provide the necessary caloric intake (Kaplan, Mathes, 2015).
Group therapy	Group therapy is also an effective tool that can be used to allow the patient to form a mutually beneficial community that supports recovery efforts.
Inpatient and/or residential facility admission	Inpatient and/or residential treatment is a comprehensive and aggressive form of treatment. It involves the patient being admitted into either a hospital or residential treatment setting for an extended period. While there, all forms of treatment may be administered to address all behavioral and health issues. This method is commonly used for more severe cases (Cleveland Clinic, 2019).

*Recovery and Relapse*

Early recognition of anorexia nervosa is crucial in promptly implementing a treatment plan and achieving recovery. A consequence of delayed treatment is medically unaddressed progression of the condition, resulting in hampered recovery successes and the high mortality rate (Toulany et al., 2015). Of this population, 20% may display no psychological or physical health improvements regardless of undergoing any form of treatment. Some individuals with anorexia nervosa may have deterioration of health and frequent hospitalizations while other individuals, while still displaying anorexic tendencies or obsessive thoughts, may be able to perform acts of daily living such as working or being in relationships. Full recovery is defined as living with the absence of anorexia nervosa related thoughts and obsessions. Only 60% of individuals with anorexia nervosa will be able to achieve full recovery at some point in their lifetime (Morris, Farrar, 2014).

Relapse is common with 66.3-77.6% of individuals experiencing a relapse at any point in their life (Pricewaterhouse Coopers, 2015). Research indicates that 50% of individuals who have undergone an inpatient treatment plan will relapse within the following year (Attia & Walsh, 2009). It is important to note that individuals who had an earlier onset of anorexia nervosa may experience a higher chance of relapse. Additional periods of admission into an inpatient or residential treatment facility may be needed to address the continuing battle with this condition (Attia & Walsh, 2009; Pricewaterhouse Coopers, 2015). Harvard Health Publishing reports that 50-73% of individuals will still meet the diagnostic criteria for anorexia nervosa ten years after completing their treatment program (Harvard Health Publishing, 2009). Although anorexia nervosa claims a 20% mortality rate, the highest of any psychological disorder (Hamilton, Culler, Elenback & Ekern, 2018; The Renfrew Center Foundation for Eating Disorders, 2002), with continued and sufficient treatment, the risk of death can plummet to 2-3% (Morris & Farrar, 2014).

### *Geographical and Financial Inaccessibility*

As anorexia nervosa progresses in severity, the methods of treatment may need to increase in frequency, intensity, and duration. With the average per capita income being \$31,177 (U.S. Census Bureau, 2018), this consequently puts accessibility to the necessary breadth of treatment options at risk (Toulany et al., 2015). The following costs of treatment have been reported from their respective research studies and were further utilized to establish estimated yearly and/or daily treatment-only expenditures. They address only cost of treatment and do not account for travel, family housing, time off work, and other lifestyle expenses.

Psychotherapy with a qualified professional can have a wide range in price. Furthermore, a specialist that deals with anorexia nervosa will only increase the price. The national average of a licensed psychotherapist is \$80-120 per session (Babakian, 2013). Geographical and socioeconomic factors may further exacerbate financial inaccessibility. For example, in some cities, such as New York City, although geographically accessible, the average cost per session ranges from \$200-300 thus making the session financially inaccessible to many (Babakian, 2013). On the other hand, although low-socioeconomic communities may have more affordable session prices, the geographic accessibility or lack of availability of professionals may cause problem (Babakian, 2013).

Due to the intensity and prolonged stays involved with inpatient and residential facilities, they are the most expensive forms of treatment (Toulany et al., 2015). Price differences exist among countries as well. For example, the price of treatment for 15 to 24-year-old individuals in Germany was \$12,800 for a 50-day treatment, while the United States' equivalent was 261% more expensive, or \$33,408 (Krauth, Buser & Vogel, 2002). Another study with adolescent females in the United States reported a 26-day treatment cost of \$17,384 (Striegel-Moore et al., 2000) while another study showed an average cost of \$97,231 for a 50-day treatment (Kalisvaart & Hergenroeder, 2007). The average recommendation for effective program duration is 3-6 months (Psych Guides, 2019), with an average duration for a fully completed program being 83 days (Anderson et al., 2017). Following this guideline, the average cost of completing a single round of

treatment can range between \$55,444 and \$349,920. Distinction must be made that a single round of treatment does not necessarily define the yearly cost of treatment. There may be multiple rounds of treatment inside the same calendar year. Furthermore, due to the high rate of relapse, cost will continue to accumulate with every additional admission (Pricewaterhouse Coopers, 2015).

### *Feasibility of Physical Activity as a Treatment Method*

There is a growing body of evidence supporting positive outcomes in the anorexia nervosa population and to establish guidelines on how to properly implement a physical activity prescription into a treatment plan. For example, results of a systematic review and meta-analysis concluded that physical activity in the anorexia nervosa population is medically safe provided the individual follows their nutrition plan (Cook et al., 2016). The Exercise is Medicine® framework of the American College of Sports Medicine and 17 additional studies were used to form the following guidelines for safe implementation of a physical activity program for individuals with anorexia nervosa:

“The exercise professional should 1) adopt a team approach with experts from a variety of relevant disciplines, 2) continuously monitor medical status and safety concerns, 3) screen for exercise related psychopathology, 4) create a written contract of how and when exercise will be used in treatment, 5) include psychoeducational component, 6) focus on positive reinforcement, 7) create a graded program, 8) start with a mild intensity and build slowly, 9) tailor the mode of exercise to the needs of the individual, 10) include a nutritional component to account for the physiological need during exercise, and 11) debrief after exercise sessions.”

Vancampfort et al. (2014) conducted a systematic review to assess pre- and post-test exercise intervention eating habits, body mass index, body fat percentage, muscle strength and endurance, and psychopathology data in 213 individuals with eating disorders (90 diagnosed with anorexia nervosa). Of the studies included in this systematic review, four addressed both anorexia nervosa and the use of physical activity as a treatment intervention (77 subjects fulfilling both criteria).

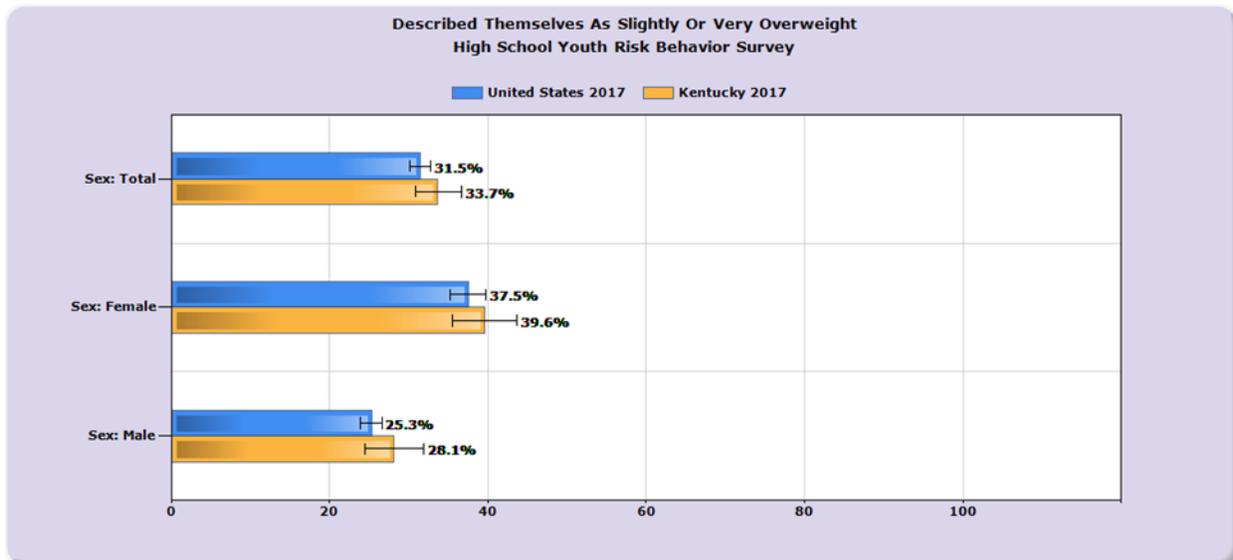
The first study utilized low intensity graded exercise including stretching, isometric and cardiovascular exercises (n=12) (Thein et al., 2000). This intervention restricted the subjects' quantity of exercise to three sessions per week for a three-month period. Outcomes of the exercise program showed increase in body mass index, body fat percentage, and a decrease in their depressive state (Thein et al., 2000). Another study used an eight-week exercise program consisting of two 60 minute sessions per week (n=14) (Chantler et al., 2006). Each session, the subjects performed three sets of 10 to 15 repetitions using dumbbells for upper body, and therabands, squats, and crunches for lower body. Results showed improvements in both body mass index and body fat percentage. Specific to the exercises, the only strength improvements found were knee extension and flexion and peak torque outputs (Chantler et al., 2006). A third study incorporated an eight-week, two time per week, standardized vinyasa yoga intervention (n=29) (Carei et al., 2010) for subjects. Psychopathological scores were assessed three weeks post intervention. These scores included Eating Disorder Examination, Beck Depression Index, and state and trait anxiety assessments. While anatomical and physiological data were not collected, all

psychopathological scores showed improvements (Carei et al., 2010). The final study researching the effects of exercise on the anorexia nervosa population used a resistance training program (n=22) (del Valle et al., 2010). This intervention involved three months of 60-70 minute exercise sessions twice a week. Intensity was kept at a low intensity of 6RM (six repetition max) of either 20-30% or 50-60%; whichever was most appropriate based on the individual's health state. Of the strength exercises used, only the seated row test improved muscular strength. Most importantly, there was no adverse effects to this program that would otherwise lead to a worsening in their anorexic traits (del Valle et al., 2010).

Overall, these intervention studies showed an increase in muscle strength, body mass index, bone mineral density, and body fat percentage. While a refeeding program was needed to reverse the effects of defective anaerobic glycolysis caused by prolonged malnutrition, benefits of resistance training are obtainable following a proper nutrition plan. In all intervention groups, no adverse effects were reported and all health statistics improved compared to non-exercise test groups. A yoga intervention showed improvements in meal plan compliance, allowing for the continuation of other exercise plans, further improving body image positivity and health scores (Vancampfort et al., 2014).

Research by Calogero and Pedrotty (2004) studying physical activity in the anorexia nervosa population confirmed benefits of 60-minute group exercise sessions held four times per week. Participants in the intervention group had lowered anxiety and depression scores, and gained an average of 40% more weight. While some individuals continued displaying excessive levels of exercise following the completion of this intervention, subjects still exhibited a higher meal plan compliance. Exercising before a meal helped reinforce the concept of calories providing necessary fuel, and repeating this process daily continued to reframe the relationship and purpose of exercise. Both studies showed a more positive relationship with food and meal adherence was formed when given a monitored exercise regimen (Vancampfort et al., 2014; Calogero & Pedrotty, 2004).

To fully understand the myriad of factors that lead to or contribute to eating disorders, and therefore can serve as points of positive intervention, viewing this mental health condition from an ecological perspective may be helpful to health practitioners. An ecological perspective allows for a holistic view of the health condition, highlighting how social and environmental factors influence individual health. While eating disorders are classified as mental health disorders, a variety of social, organizational, community and public policy factors may aid the individual's recovery. The ecological model for health promotion considers five levels of influence: the intrapersonal factors, interpersonal factor, institutional factors, community factors, and public policy (McLeroy, Bibeau, Steckler, & Glanz, 1988). See Figure 2 for a description and examples of an ecological model.



*Figure 2. High School Students in the US and Kentucky who Described Themselves as Slightly or Very Overweight (YRBSS, 2019)*

While treatment methods often address individual, social, and organizational influences on anorexia nervosa, the community and policy levels can often be unaddressed. Community factors may be operationalized as having geographic access to treatment and policy factors may be operationalized as having financial access to treatment. In addition to showing evidence that physical activity has the potential to greatly improve the physiological and psychological health of the anorexia nervosa population; effectively treating and/or warding off the progression of the disorder (Cook, Wonderlich, Mitchell, Thompson, Sherman, & McCallum, 2016), physical activity can potentially serve as a financially accessible method of treating anorexia nervosa. Although there is a stigma that physical activity will only lead to progression of this disorder and that excessive physical activity is a symptom present in 80% of anorexia nervosa patients, there is evidence showing physical activity as an effective preventative and/or supplemental treatment form when properly structured (Cook et al., 2016). When conducted with the appropriate frequency, intensity, duration, and type, physical activity is associated with not only positive physical health outcomes (e.g. preventing/managing diabetes, cardiovascular disease, and obesity) but also positive mental health outcomes (e.g. preventing/managing anxiety, depression).

#### *Physical Activity as a Geographical and Financial Accessible Treatment Method*

Access to physical activity programs and places may serve as financially and geographically viable treatment methods for improving the likelihood of recovery. Fitness facilities typically offer fitness classes, personal training, nutrition counseling, and healthy-lifestyle coaching; all noted as interventions used in anorexia nervosa treatment research. The American College of Sports Medicine offers certifications that recognize individuals capable of addressing and meeting challenges specific to various clinic populations. Monitored by certified trainers along with physician and care team supervision, physical activity can be combined to create a physical activity prescription capable of treating the disorder.

While varying by types of fitness facilities, programming available, and geographical regions, the national average cost of a monthly gym membership is \$58 (Gans, 2018). Likewise, certified personal trainers cost varies, ranging an average of \$50-160. Using these national averages, a yearly expenditure for a physical activity-based treatment plan would cost \$11,616. This figure includes a 12-month gym membership at \$58 per month, and two personal training appointments per week at \$105 per appointment. Using physical activity as an adjunct treatment option has the potential to dramatically reduce financial burden to the individual. Utilizing physical activity prescription alongside psychotherapy yields an average yearly expenditure of \$22,016. This is in comparison to using an inpatient and/or residential facility costing \$55,444-349,920 for a single round of treatment.

### **Conclusion**

In conclusion, eating disorders have the highest mortality rate of any mental illness (Smink, van Hoeken & Hoek, 2012). The former director of the National Institute of Mental Health, Thomas Insel (2012), described the difficulty of effectively being able to treat eating disorders with the following post:

“While it is encouraging to have new and effective treatments, we continue to hear from families with a teenager who has received insurance coverage for intensive care for a metabolic crisis, but could not get coverage for the underlying eating disorder. There may be no other area of mental health care with such an obvious injustice. Imagine a teenager with leukemia receiving antibiotics for an infection but not receiving treatment for the cancer. While the dynamic duo of mental health parity and health reform may lead to a solution, coverage of treatment for eating disorders will ultimately differ by state. That is all the more reason to remember...that eating disorders are serious, sometimes fatal, disorders.”

Anorexia nervosa is a psychological disorder that can show improvement in both physiological and psychological health with physical activity (Cooke et al., 2016). Given that treatment options may not be geographically or financially accessible to all individuals, physical activity prescription may be an excellent method for supplementing treatment plans. Physical activity can be accessible and affordable in communities and may not be dictated by insurance. Further research is warranted to test the feasibility and efficacy of physical activity as a form of treatment for individuals with anorexia nervosa. Positive results may reduce financial and geographic burdens for preventing individuals from healthful recovery options, thus closing the gap on treatment accessibility and equity.

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**(Peer Review Article)****Finding a Healthy Balance of Bats and Books within a NCAA Division-II Championship Team: A Case Study Examining the Success on the Field and in the Classroom**

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**Abstract**

Academic clustering can be described as a situation when at least 25% of a collegiate athletic team (i.e., roster) of SAs choose the same major (Fountain & Finley, 2009). There are substantial reasons to believe that student-athletes are selecting academic majors with less commitments through academic clustering which influences a lack of commitment on the part of the SA to academics and career exploration (Foster & Huml, 2017). The purpose of the study is to identify themes disseminated by the investigator pertaining to the potential factors from a head coach's point-of-view influencing academic and athletic success within a collegiate athletic team that shows success on the field and in the classroom. The design of this study is a *single case, Intrinsic* case study. The investigator implemented techniques and strategies for developing grounded theory as this approach is commonly used concepts of description, conceptual ordering, and theorizing are needed for an investigation (Strauss & Corbin, 1998). Results showed themes that contributed to the healthy balance of academics and athletics for a female NCAA D2 championship team.

**Introduction**

The conversation surrounding academic clustering for the college student-athletes (SA) typically covers male SAs at the National Collegiate Athletic Association (NCAA) Division-I (D1) level (Fountain & Finley, 2009; Fountain & Finley, 2011; Haslerig & Navarro, 2016; Schneider, Ross, & Fisher, 2010). Academic clustering can be described as a situation when at least 25% of a collegiate athletic team (i.e., roster) of SAs choose the same major (Fountain & Finley, 2009). Additionally, the conversation commonly involves the NCAA SA's balance and commitment for athletics and academics (Foster & Huml, 2017), career development (Haslerig & Navarro, 2016), or academic support (Kane, Leo, & Holleran, 2008). There are substantial reasons to believe that student-athletes are selecting academic majors with less commitments through academic clustering which influences a lack of commitment on the part of the SA to academics and career exploration (Foster & Huml, 2017). While other studies have taken an approach of identifying academic clustering to "provide exemplars for addressing the academic struggles affecting the larger college athlete population (e.g., clustering) ...and provide(s) lessons about where they struggled" (Haslerig & Navarro, 2016, p. 217-8), this study plans to provide information from the lack of struggling (i.e., the success) a team endured on and off the field at the collegiate level.

*The Significance of Academic Clustering*

The influence of academic clustering on student-athletes has been a focus for multiple research investigations (Fountain & Finley, 2009, 2011; Houston & Baber, 2017; Schneider et al., 2010) with significant results found regarding race, sport, and the status of the student (e.g., athlete). These results potentially influence the exploitation of the NCAA SA, institutional practices, inequalities within higher education, and other institutional influences (Houston & Baber, 2017). Past researchers uncovered that not only is academic clustering present, but it may also be a growing trend amongst college athletics (Fountain & Finley, 2009, 2011; Otto, 2012).

The important factors for SA's considering a program to play for at the college level includes the coach's commitment to the program and the potential of the player's relationship with the coach. There also appears to be a lack of emphasis on academics within the decision-making for choosing an institution to attend. The focus of the recruit (i.e., potential SA) was not considering the best deal when considering the institution (Cooper, 1996). However, a study that specifically included lacrosse players found that academics, coaching staff, social atmosphere, financial aid, and athletics were the hierarchical priorities for the SA (Pauline, 2010).

### *The Balance within the Student-athlete Experience*

Studies show that SAs (male and female), when compared to student non-athletes, are as engaged in educationally purposeful activities (Umbach, Palmer, Kuh, & Hannah, 2006). These activities include participation in active and collaborative learning activities and interacting with faculty on a frequent basis. At the NCAA Division-III (D3) level, students (student-athletes and student non-athletes) report higher levels of academic challenge than at the NCAA D1 and Division-II (D2) levels. Moreover, women at the D1 and D2 levels are less likely to participate in active and collaborative learning activities than women at the D3 level (2006).

The purpose of the study is to identify themes disseminated by the investigator pertaining to the potential factors from a head coach's point-of-view influencing academic and athletic success within a collegiate athletic team that shows success on the field and in the classroom. The problem the investigator identified is there is a scarce amount of research available pertaining to the academic success college athletic sport teams achieve while also achieving success within competitive sport. A secondary problem the investigator identified is the scarce amount of literature pertaining specifically to the female NCAA D2 SA. The investigator established three research questions influenced from past research to set the framework for the study (Foster & Huml, 2017; Otto, 2012; Umbach et al., 2006):

RQ1: Are there any examples of clustering within the championship NCAA D2 team?

RQ2: What challenges does the head coach (HC) believe exist for a student-athlete regarding their academic commitments?

RQ3: What techniques or strategies does the head coach (HC) believe exist to create a healthy balance of academics and athletics for the student-athlete?

## **Literature Review**

### *Academic Clustering*

Schneider et al., (2010) gathered information on upperclassman in the form of a content analysis using NCAA D1 football media guides from the Big 12 Conference for the seasons of 1996, 2001, and 2006 to determine if academic clustering existed within the conference (i.e., 12 institutions). It was uncovered that the social sciences and communications were majors of nearly 37% of the players in the Big 12. In 2001 and 2006, three and seven of the 12 institutions respectively showed signs of academic clustering. Interesting findings included the University of Oklahoma containing 70% of their players majoring in sociology and the University of Texas at Austin containing 69% of their players majoring in liberal arts (2010).

Fountain and Finley (2009) also gathered information on upperclassman, football players for athletic programs within the Atlantic Coast Conference (ACC). The examples of clustering appeared for all 11 schools within the conference. These majors included Business Management, Social Science, Liberal Arts, Apparel and Resource Management, Sport Management, Sociology, Communications, Arts and Science, Sociology, and Sport Administration. A staggering 73% of the upperclassman for one football team in the conference concentrated on Business Management.

A longitudinal analysis over a ten-year period found that NCAA D1 football players at one institution “indicated that players migrated into a single clustered major over time and that a significant number of touted recruits and National Football League draftees selected the clustered major” (Fountain & Finley, 2011, p. 24) of Apparel, Housing, and Resource Management. It’s also worth noting that the results showed the football players majoring in 28 different majors during the first two years of the study and the number dwindling down to 19 different majors for the third and fourth years of the study.

The presence of academic clustering can be related to the membership of an institution (NCAA) and the governing boards that influence the institution. Houston and Baber (2017) found that the set of standards placed upon NCAA institutions by the NCAA governance boards helps shape the policies that shape academic eligibility. It is this finding that can explain the statistically significant influence of academic affiliation and athletic affiliation on academic clustering. It is worth noting that the study only included males playing football within the NCAA D1 (2017).

### *College Experiences for Student-athletes*

The engagement a collegiate SA receives for effective educational practices tends to influence the balance a SA has for their academics and athletics. Prior studies investigating the educational experiences of SAs compared to those of non-athletes found significance between gender. “male student-athletes are as challenged academically, interact with faculty as frequently, and participate as often in active and collaborative learning activities” (Umbach et al., 2006, p. 718). Moreover, male SAs at the NCAA D2 level reported higher grades than men at the NCAA D3 level. When comparing female SAs to the non-athlete student it appears the female SAs are more likely to interact with their professors and partake in vigorous learning activities. Furthermore, the female SAs reported statistically, significantly higher self-reported grades than the female non-athlete students (2006).

Prior research studies also uncovered reason to believe NCAA SAs are influenced by the levels of identification they have for their identity as a student (Smith, 2018) and as an athlete (Foster & Huml, 2017; Smith, 2018). While NCAA D2 SAs commit to their student role identity more than their athletic role identity, significance was found that their student commitment is influenced positively by their levels of athletic identification socially and negatively influenced by their levels of athletic identification from a negative affectivity standpoint (Smith, 2018). According to Foster and Huml (2017), a strong athletic identity for the NCAA SA leads to “negative ramifications on the student-athlete’s academic experience” (p. 922). It is this level of athletic identity that leads to the likelihood of the NCAA SA not choosing a major that aligns with their career goals.

In 2005, the University of Minnesota took steps to assessing the current practices regarding the academic support influencing their student-athlete’s academic performances and attempted to highlight strategies that promote success for the SAs. While the study was comprehensive, the investigators recommended to “adjust scheduling of course offerings to reduce bottlenecks and delays and provide flexibility in time of day” (Kane et al., 2008, p. 123). This recommendation stemmed from the identified academic barriers that SAs encounter for certain academic programs. The aim of this investigation is to report a case that appears to have a successful balance of academics and athletics for the NCAA SA.

## Methodology

A case study design was implemented due to the recommendation of Baxter and Jack (2008) stating:

A case study design should be considered when: (a) the focus of the study is to answer “how” and “why” questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context (p. 545).

The description of this investigation is deemed a *single case*, *Intrinsic* case study as Baxter and Jack (2008) explains that a *single case* is appropriate when the researcher identifies a single individual (i.e., head coach) as responsible for the holistic decision-making for the phenomenon and *Intrinsic* when the (primary) purpose of the study does not include building theory or understanding some abstract construct, but because the researcher takes a genuine interest in the case to better understand the phenomenon.

The methodology for the study is two-fold. Scholars suggest that a mixed-methods approach may be beneficial to examine the intersection of academic outcomes and organizational culture (Houston & Baber, 2017). First, a data was collected to find out the academic statistics for an athletic female team at a Midwestern university that is a state, public institution containing membership in the NCAA’s Division-II (D2). The university is over 50 years old, contains four associate, 60 undergraduate, 13 graduate, and 1 doctoral degree programs. Total enrollment for the institution is roughly 9,000 students comprising of 63.2% identifying as female and nearly 85% classifying as in-state residents.

The investigator within this study utilized Case, Greer, and Brown's definition of academic clustering as a situation when at least 25% of a collegiate athletic roster of student-athletes share one major (as cited in Fountain & Finley, 2009, p. 5). Second, the investigator sought to find out qualitative data concerning the academic culture of the NCAA D2 female team. The sole participant of the case study was the HC for the NCAA D2 female team being studied. The investigator believes it is significant to state that case studies are not methodological choices. They are a methodological approach that includes several data-gathering techniques (Berg, 2001; Stake, 2000).

### *Position of the Investigator*

The investigator for this study contains experience as a collegiate athlete, a collegiate assistant coach, and a student-athlete facilitator (i.e., advisor) prior to becoming a higher-education scholar. The insights and experience gained from these roles were influences in identifying the unique situation of success on and off the field for the team included in the case study. The experiences included multiple times when the investigator's head coach instructed the assistant coach(es) to place a SA in a course that would not hinder the SA's athletic commitments. Additionally, there were times when the investigator witnessed the head coach suggesting that a SA select a major that did not include conflicts (e.g., lab requirements) with the athletic team schedule. The investigator shares previous sentiments of scholars for how student-athletes are prone to be "clustered into specific majors to ease eligibility concerns" (Navarro, 2015, p. 368).

### *Instrumentation*

Following IRB approval at the investigator's institution a recruitment email was sent to the HC of the NCAA D2 team requesting participation. The interview process was designed for the coach's convenience (e.g., time, place). Participation in the study was strictly voluntary and the coach could quit at any time. Lastly, the transcripts for the interview were sent to the coach to allow for any edits or removals from the data the coach felt was necessary. The interview instrument contained questions addressing the research questions in the study. They items are as follows:

- 1) What challenges exist for you planning your regular season and the academic schedules for your student-athletes?
- 2) What challenges do you believe exist for the student-athlete when there is an athletic versus academic conflict?
- 3) What challenges do you believe exist for the faculty member when there is an athletic versus academic conflict?
- 4) Can you give a description of the things you believe reduce the potential conflicts your student-athletes can have throughout the season pertaining to the balance of their athletic commitments and academic commitments?
- 5) What suggestions that contain an academic focus do you have for athletic directors to improve the educational environment for the coaches, student-athletes, and faculty?
- 6) What suggestions that contain an academic focus do you have for head coaches to improve the educational environment for their student-athletes when communicating with faculty?

### *Data Analysis*

The investigator implemented techniques and strategies for developing grounded theory as this approach is commonly used concepts of description, conceptual ordering, and theorizing are needed for an investigation (Strauss & Corbin, 1998). The following definition by Strauss and Corbin was utilized by the investigator, "Description represents the account related from the perspective of the person doing the depicting" (p. 15). The analysis of the data was accomplished by applying the discovery of categories from an open coding technique. The investigator then distinguished themes within the data that represent the central findings (i.e., phenomena) for the case study. The open coding process included the investigator organizing the interview data into relevant categories from properties within the participant's responses (e.g., line-by-line analysis). Then, the investigator implemented a process called axial coding that connects categories to their sub-categories or properties. Lastly, the investigator identified any reoccurring patterns to establish structure in the analysis to give meaning to the categories disseminated throughout the data (1998).

### **Results**

A preliminary (content) analysis was done on the female NCAA D2 team dating back to 2015 to show evidence of success within NCAA competition. Table 1 gives a breakdown of the wins, losses, and accomplishments for the team. The team's history of winning is evident starting with a Midwest Region Runner-up finish and #17 final ranking in 2015. In 2017, there was improvement with a Midwest Region Championship, Midwest Super Regional Championship, and a NCAA D2 National Championship Series appearance with a #9 final ranking. The success culminated in 2018 with the team achieving a Conference Tournament Championship, Midwest Region Championship, Super Regional Championship, and a NCAA D2 National Championship (i.e., #1 final ranking).

*Table 1. NCAA Team's Winning Percentage (2015-2018)*

Year	Type	Wins	Losses	Winning%
2018	All Games	41	23	0.641
	Conference	15	13	0.536
	Non-Conference	26	10	0.722
2017#	All Games	46	14	0.767
	Conference	19	7	0.731
	Non-Conference	27	7	0.794
2016	All Games	35	21	0.625
	Conference	21	9	0.700

	Non-Conference	14	12	0.538
2015	All Games	39	11	0.780
	Conference	22	6	0.786
	Non-Conference	17	5	0.773

The first research question (RQ1) addressed happenings of academic clustering with the NCAA D2 female team. Within the 33 different majors listed, the investigator did not find any evidence of academic clustering within each year for the team dating back to 2015. In 2018, there were 15 SAs on the championship roster. The most assumed majors within the team were Biology, Health Service, and Kinesiology; two team members for each major. It is worth noting that the majors of Biology and Kinesiology contain lab requirements that exceed the common core for the institution. Collectively, the team grade point average (gpa) scored at 3.32. Twelve of the SAs achieved at least a 3.0 gpa and six of those twelve achieved at least a 3.6 gpa.

For research questions two (RQ2) and three (RQ3) the investigator disseminated themes from the HC's responses to the interview questions. RQ2 examined the perceived challenges SAs face regarding their academic commitments. The following themes emerged from the interview with the HC: Career self-efficacy and Class-scheduling conflicts.

#### *Career self-efficacy*

The HC appeared to be very adamant about the intentions of the female SAs to be successful after their eligible on the team expired (i.e., after they graduated). The ambitions of these athletes to be successful after college includes taking on majors that are more demanding and achieving a gpa admirable enough to grant them admission to graduate schools or competitive occupations (e.g., Nursing). This was exemplified by the HC's reference to a NCAA D1 conference, "They can't do that and play at Big Ten." The two categories feeding into this theme are challenging major and maintaining a high gpa.

#### *Class-scheduling conflicts*

The challenges the SAs faced with their course schedules throughout the year appeared to be a significant concern of the HC. Consistently throughout the interview the HC made it clear that the SAs must plan efficiently and calculatedly to avoid unnecessary conflicts with their semester class schedule. The properties that disseminated from this theme to create the categories of prioritizing and timing tended to be hypothetical examples the HC frequently endures. The prioritizing category seemed to represent the HC micro-managing the SA on a daily-basis. While the HC stayed on-top of things concerning the weather and travel, the SA still must realize the importance of the time requirements (e.g., labs) each semester contains within their courses. The category of timing is characterized (i.e., properties) by the decisions for course-loads and when to take specific classes. There is an off-season and an in-season for the team. The nature of the two (seasons)

influence when the HC believes the SAs should take specific courses (i.e., more difficult than otherwise). Table 2 illustrates the characteristics of the categories (i.e., properties) concerning the SA's challenges with comments from the HC.

*Table 2. Head Coach's Comments on Student-athlete Challenges*

Category	Head Coach's Comments
Challenging Major	We've had several kids on our team that are in the medical field We've been getting a lot of tremendous athletes that realize that they can't go to mid to big D1 schools and have [a] career ...they realize that our nursing department is top in the state and one of the best in the country ...it seems to be like Math and Biology ( <i>courses that SA's struggle with</i> ) the nursing program is very difficult
Maintaining High gpa	...going fast-track to IU-medical and what-not Purdue Veterinary School ( <i>SAs need a high gpa to receive admission</i> ) I have some kids that stress so much about the Biology classes and what not. But they still get 3.8s ...3.9s (gpa)
Prioritizing	half our team has clinicals at 8 am, then we (they) have to practice at 6 am when you (they) are out playing for 30 hours a week... have to study for seven days; for 12 hours a day
Timing	Having 4 o'clock classes is just not conducive; especially for our main season in the spring.

RQ3 examined the techniques or strategies HC believes exist to create a healthy balance of academics and athletics for the SA. The HC consistently throughout the interview displayed an awareness for the SA's conflicts and challenges (RQ2) that appeared to contribute to the themes for a healthy balance of academics and athletics within the championship team. The following themes emerged from the interview: Culture-creation and Mentoring.

### *Culture-creation*

The HC described calculated efforts to create a culture within the team for success. These efforts begin right away with recruiting the SAs and appeared to be consistent no matter the time of the year (in-season, off-season). The three categories that represent the efforts of the HC to create a culture of success are dedication and longevity. The SAs must buy-in to the team's culture to be success both in the classroom and in competition. Moreover, the HC believes that the culture of the team must be one that continuously produces excellence by the replacing the SAs that graduate with recruits that also buy-in to the system. The properties within these two categories include efforts by the HC for efficiency throughout the year for the SAs to be successful and reduce their stressors due to academic conflicts and uncontrollable variables. More specifically, the dedication represents properties of the HC and the SAs making it a priority to have their academics to allow their athletics to be clear of disruptions. This is highlighted by the hypothetical example of plans changing due to weather:

It's more about getting out there immediately and saying there's going to be a time when it's Thursday morning and I'm emailing you and saying we just had a rain mess. And now we're leaving today instead of tomorrow and I'm going to miss two days of classes now instead of one.

The longevity represents the legacy the HC believes the SAs should aspire to accomplish during their college experience.

### *Mentoring*

The priority to mentor the SA from the HC reinforced the decision by the investigator to seek the perceptions of the HC given the amount of oversight the HC consistently utilized within the team's operations (Baxter & Jack, 2008). The HC preached accountability on the part of the SAs on the team. This seemed to establish strong relationships with the professors of the SAs. This require the HC to resist doing too much at times, but also realizing there are times to step in as a mentor. The first category extracted from this observation is responsibility. The second category is suggestion. The HC frequently created a culture of efficiency through suggestions that typically addressed potential conflicts for the SA. These suggestions typically covered academic conflicts, but also seemed to address the SA's uniqueness as an individual. This category demonstrated the HC's capability to mentor by displaying cognition for the SA's needs. The categories within the themes of creating a culture and mentoring when attempting to have a healthy balance of academics and athletics for the NCAA D2 female team are listed in Table 3. Each of the categories include comments from the HC that explain the properties within each category.

*Table 3. Head Coach's Comments on the Team's Healthy Academic versus Athletic Balance*

Category	Head Coach's Comments
Dedication	Again, we don't miss classes in the fall. That's basically a rule ...we (SAs) have good relationships with our professors. I preach that at the beginning I've had to proctor things on road so... again, if you (SA) have to keep the exam on the same day
Longevity	...you know this is a 40-year decision not a four-year decision. ... they have to leave the program better than they found it. I recruit kids that have that self-motivation...
Responsibility	We make sure that our kids are taking an active role academically. I don't really have to force that You've got to make sure you are dedicated to this [many] hours a day to get to the library and sit-down and get your work done But we always preach to them that you're better off to tell me now because once you dig-a-hole
Suggestion	Let's have those classes that we can maybe take a little more time on...tutoring (needed)...let's take those classes in the fall ...we have a lot of kids on our team that take more online classes in the spring

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... if you fail a class then you're better off to drop it or get a new teacher or something if you're just kind of losing your way somewhere

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## Discussion & Conclusion

The content within the results contributes to the discussion about the collegiate student-athlete experience. Previous research suggests that the influence of priorities to win can significantly impact the academic commitment for the SA (Foster & Huml, 2017; Fountain & Finley, 2009, 2011; Schneider et al., 2010), however, this study somewhat challenges the notion that academic clustering is the preferred trend (Foster & Huml, 2017; Fountain & Finley, 2009, 2011; Otto, 2012). This study illustrates the capabilities a team can have when attempting to be successful on the field and within the classroom. It supports the concept that being a supportive, driven, and caring coach contributes to the successes for a SA and the athletic team as a whole. The purpose of the study was to identify influences on the academic and athletic success within a NCAA D2 female championship team. The investigator was able to identify what perceptions of the HC for the SA's conflicts as an athlete and student contributed to attempts to create a healthy balance of success in the classroom and in competition for the female NCAA D2 SAs. With all things considered, the HC put emphasis on having morals, ethical values, and integrity.

This study also provides insight and direction for collegiate coaches struggling to achieve a healthy balance for the SA's academics and athletics. The themes extracted by the investigator can be used as tools to assess the environment of a collegiate athletic department or the culture of a collegiate team. It is the assumption of the investigator that individuals, SA or not, attend college to end up with a job (career) after their experience. It is not lost on the investigator that SAs primarily choose the institution on the notion to compete (Cooper, 1996) and have success doing so for the institution. However, past research also shows that SAs at the NCAA D2 commit to their role as a student more than their role as an athlete (Smith, 2018). Previous studies found that a heavy commitment to the athletic role can be detrimental to the academic success for the SA (Foster & Huml, 2017). The investigator believes it is safe to assume the NCAA D2 female championship team challenges that belief given the high gpa of the SAs, challenging majors, and a championship. The achievement of the championship gives further reason to believe the self-concept of these team members ensures a high athletic identity. Furthermore, this study provides reason to believe that the healthy balance can bring about success for both components of the student-athlete experience.

The results of this case study cannot be generalized outside of the team in question. Findings from past research (Foster & Huml, 2017; Otto, 2012; Umbach et al., 2006) cannot be authentically compared due to the scope of the study. However, future studies should consider implementing the framework in this study that was influenced by the past research. Additionally, future studies should investigate the reflections of alumni athletes from championship teams to find out how it influenced their job-related careers. There is also a need for a longitudinal analysis that includes both championship squads and struggling squads for comparison.

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**(Peer Review Article)****Juvenile Justice System Involved Youth, Access to Preventative Healthcare, and Its Impact on the Whole School, Whole Community, Whole Child Model: A Pilot Study**

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**Abstract**

Youth who are involved with the juvenile justice system have worse health outcomes compared to those who are not. The Centers for Disease Control and Prevention's Whole School, Whole Community, Whole Child framework draws attention to the connection between health and academic achievement. The purpose of this pilot study was to create a survey instrument that could be used in future research to study preventative health service utilization, access to, and barriers in the delinquent juvenile population. It is hoped future use of this survey will help to address the gap in research in regard to preventative health services utilization among juvenile justice-involved youth. An improvement in provision of, access to, and utilization of preventative health care services is an important issue that may serve to prevent delinquency and improve general community health. There were no significant correlations between the barriers parents faced in accessing age appropriate screenings and juvenile delinquent behaviors, nor between the barriers parents faced in accessing age appropriate vaccinations and juvenile delinquent behaviors. However, as a pilot study, the results are not generalizable and more research is needed in this area to truly understand the relationship between preventative health service utilization and juvenile justice-involved youth.

*Keywords: health access, health service utilization, juvenile health*

**Introduction**

Health and wellness is multidimensional and interrelated. It is not only physical wellness, as most associate with health (e.g, exercise and diet), but also intellectual, social, environmental, financial, spiritual, and emotional wellness. The Centers for Disease Control and Prevention (CDC) created a framework to focus on these collaborative partnerships called the Whole School, Whole Community, Whole Child (WSCC) model. The WSCC model is "student-centered and emphasizes the role of the community in supporting the school, the connections between health and academic achievement and the importance of evidence-based school policies and practices" (CDC, 2018). Schools rely on collaborations between students, parents, educators, community members, and public health professionals to improve student health and academic outcomes.

The WSCC model addresses health in schools through ten components (refer to Table 1) which include physical education and physical activity; nutrition environment and services; health education; social and emotional school climate; physical environment; health services; counseling, psychological, and social services; employee wellness; community involvement; and family

engagement (CDC, 2018). Similar to the dimensions of wellness, these components are interrelated. This pilot study examined a vulnerable population of students, juvenile justice system involved youth, in relation to the components of the WSCC model; specifically, the impact accessibility to health services has on the other components.

*Table 1 Whole School, Whole Community, Whole Child (WSCC) Framework*

<b>WSCC Component</b>	<b>Aspects included in the WSCC Component</b>
Physical education and physical activity	National Standards for Physical Education to address motor skills and behaviors for healthy active living
Nutrition environment and services	Students learn practice healthy eating
Health education	National Health Education Standards addressed through health education curricula and instruction
Social and emotional school climate	Focus on the psychosocial aspects of students' educational outcomes and success
Physical environment	School safety
Health services	Assist students with chronic conditions and be able to respond to emergencies
Counseling, psychological and social services	Address psychological, academic, social, and non-educational barriers to student educational outcomes and success
Employee wellness	Focus on the health of school faculty and staff through collaborative partnerships between school districts and health insurance providers
Community involvement	Focus on partnerships with community organizations
Family engagement	Strengthen student success with family support and involvement

Juvenile courts across the United States processed an estimated 975,000 delinquency cases and 100,100 status offense cases<sup>1</sup> in 2014—approximately 2,900 cases per day (Hockenberry & Puzzanchera, 2017). The health needs of this population are of special concern: juvenile justice-involved youth<sup>2</sup> have higher rates of health needs than the general youth population (Golzari, Hunt, & Anoshiravani, 2006) and most of them have health needs that are unmet (Acoca et al., 2014). Health problems may cause stress, impair cognition, reduce emotional well-being, hurt school performance, and disrupt interpersonal relationships (Lubkin & Larsen, 2006; Woods, Farineau, & McWey, 2013). This may subsequently lead to family and school disruption as well as delinquent behavior.

<sup>1</sup> “Delinquency” refers to acts that would be criminal if an adult committed them (i.e. theft, robbery, murder). “Status offenses” are acts which are illegal for juveniles but would not be illegal for adults (i.e. smoking, drinking, truancy, running away).

<sup>2</sup> “Justice-involved” youth are youth who have been involved in the justice system. This includes pre-adjudicated youth who have been cited or referred to court/diversion all the way to youth who are on probation or have been released from a residential program and are in aftercare (parole). Justice-involved youth do not necessarily have formal delinquent records.

While there is some research linking health with behavioral outcomes, there is little research on the health, health services access, and barriers to services of youth engaging in delinquent behavior. The researchers performed a pilot study to develop a survey that will be used to study preventative health care utilization and access barriers among delinquent youth. By identifying health needs and access barriers, it is hoped that local community health organizations can better meet the needs of this population through more deliberate and knowledgeable programming and improve coordination with the juvenile justice system. The pilot study sought to create a survey that could address three research questions: (1) Is there a correlation between preventative health care utilization and juvenile delinquent behaviors? (2) Is there a correlation between the number of barriers to access preventative health care and juvenile delinquent behaviors? and (3) Are there correlations between drug use and severity of offenses and health care utilization?

### **Literature Review**

The Kentucky Incentives for Prevention (KIP) Survey is conducted every even-year in the fall in participating school districts to assess student use of alcohol, tobacco, and other drugs and factors associated with potential substance abuse among 6<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders. Another use of this survey is to evaluate the impact of substance use prevention programming efforts (REACH Evaluation, 2019). The most recent KIP survey was conducted in fall 2018; data from this collection cycle is not yet available. The KIP survey was used as a resource when developing questions for the pilot survey. The KIP survey provides state trends among two of the grades included in this pilot study – 6<sup>th</sup> and 8<sup>th</sup> grades. While the KIP survey included questions about accessibility of substances, personal disapproval of substances, perceptions of parental and peer disapproval of substances, and substance use among their peer group, it does not include questions on substance use among family.

In Kentucky, there were 1,419 drug-related deaths in 2016, 32 of these drug-related deaths occurred in neighboring or nearby counties to the study county (12 in McCracken, 10 in Marshall, and 10 in Hopkins Counties) (opioid.amfar.org). Community members that participated in the 2015 Calloway County Needs Assessment identified substance abuse as the second greatest health concern in the county. According to the 2016-17 National Survey on Drug Use and Health, 89,000 Kentuckians, aged 12 and older, engaged in substance use were in need of, but not receiving, addiction treatment in the past year (NSDUH, 2019). In Calloway County, there are currently no in-patient treatment options. Moreover, oral health has been a priority in the state of Kentucky. The Making Smiles Happen: 2016 Oral Health Study of Kentucky's Youth found that oral health of Kentucky's school children is worse now than it was 15 years ago despite more being covered by dental insurance (Making Smiles Happen, n.d.).

The Office of Juvenile Justice and Delinquency Prevention (OJJDP) has noted that “young people who persistently abuse substances often experience an array of problems, including academic difficulties, health-related problems (including mental health), poor peer relationships, and involvement with the juvenile justice system” (OJJDP, n.d.). Changes in academic performance may be one of the first signs of substance abuse issues; thus, an early intervention point (OJJDP, n.d.). The Whole School, Whole Community, Whole Child (WSCC) framework should provide all of the resources for early intervention when an issue is identified.

A key component of the WSCC is the community aspect, which includes access to health care and substance abuse treatment options. Before the Affordable Care Act (ACA) was implemented there were 50 million Americans without health insurance (Galewitz, 2013). The ACA required individuals to purchase insurance and contained a provision making preventative services available without copays, coinsurance, or deductibles (United HealthCare Services, 2019).

Another aspect of the ACA was the option for states to expand their Medicaid coverage. Medicaid coverage is a federal and state insurance program-while the specifics vary by state, income determines the programs for which persons are eligible. America's Health Insurance Plans (AHIP) completed a study analyzing access to care and the provision of preventive services. Results of the AHIP survey found that those with Medicaid coverage had significantly better access than people with no insurance (AHIP, 2019). "Adults were more than four times more likely, and children were two to three times more likely, to receive certain preventive care services than people with no health insurance" (AHIP, 2019). For Kentucky residents that have employer-sponsored insurance, but it is too expensive to add coverage for dependents, there is the Kentucky Children's Health Insurance Program (CHIP). This provides free or low-cost health insurance for children under 19 (Kid's Health, 2017).

While the idea of the ACA was to increase access to health care services for more Americans, according to the Center for Advancing Health (CFAH, 2011), Americans face numerous barriers to accessing health care besides insurance. Health care cost was identified as a barrier for 18% of Americans; yet, 21% stated a delay in seeking health care for nonfinancial reasons (CFAH, 2011). The common theme among nonfinancial barriers dealt with time – being too busy, medical clinic office hours inconvenient, appointments taking too long, and not being able to get into the doctor soon enough (CFAH, 2011).

### **Delinquent youth and health**

#### *Health status*

Much of the research on the health needs of the delinquent population are focused on those in custodial care and on mental health and substance abuse issues. Little research exists on pre-incarceration health and social service utilization (Potter, 2014). Youth face physical health problems including dermatological, respiratory, dental, gastrointestinal, genitourinary, metabolic, and developmental issues (Committee on Adolescence (COA), 2011). However, juvenile justice-involved youth have higher than normal rates of these health problems than the general juvenile population (Golzari, Hunt, & Anoshiravani, 2006; Morris et al., 1995; Sedlak & McPherson, 2010). One survey of youth committed to juvenile residential facilities discovered that over two-thirds of the youth reported some type of healthcare need (Sedlak & McPherson, 2010). This survey further found that more than one-third of respondents had dental, vision, or hearing problems and more than one-fourth needed care for an illness, injury, or other physical health need (Sedlak & McPherson, 2010). Health issues are especially prevalent among females held in juvenile justice facilities. Females are more likely to suffer from physical and mental health problems than their male juvenile justice-involved counterparts (Acoca et al., 2014; COA, 2011;

Leschied, 2011; Teplin et al., 2013), but are less likely to have these needs identified or treated (Acoca et al., 2014).

In addition, it is estimated that 50-75% of youth detained in the criminal justice system have a mental health issue (International Society of Psychiatric-Mental Health Nurses, 2008; Leschied, 2011; Rawal, Romansky, Jenuwine, & Lyons, 2004; Rogers, Zima, Poweel, & Pumariega, 2001) with African American youth most likely to have underserved mental health issues (Rawal et al., 2004). Complicating this issue, mental health problems may go undetected because most juvenile detention facilities have inadequate screening procedures (Rogers et al., 2001). Often comorbid with mental health is substance abuse, which may be a means of self-medicating a mental health issue (Harris & Edlund, 2005), which can contribute to delinquent behavior. Indeed, children involved in the juvenile justice system are known to have substance abuse issues (Siegel & Senna, 2000), which may in turn impact health care utilization. While the literature on the impact of drug use on health care utilization is limited and often indirect, there are a few studies that indicate that treatment for alcohol and drug abuse reduced subsequent use of health care (Jones & Vischi, 1979).

#### *Access to healthcare*

There are a variety of reasons delinquent youth may have less access to health care. In one study of injecting drug users, some of the barriers identified to their use of health care and social services included the lack of services, the burden of appointments, transportation problems, fear of stigmatization, lack of material resources, and personal ill health (Neale, Tompkins, & Sheard, 2008). Many delinquent youth are from low-income families and thus cannot access the healthcare system with private coverage through a parent's employment (Acoca et al. 2014). For example, among adult parolees, one study found that 93% had no form of insurance (Conklin, Lincoln, & Flanigan, 1998). Youth of color, overrepresented among the justice-involved population, are also more likely to come from low-income families and to have poorer healthcare than White youth (COA, 2011). Unfortunately, many at-risk youth are not screened for physical and mental health issues until they are admitted to a juvenile custodial facility (COA, 2011), leading some scholars to assert that the juvenile justice system may be the only way some youth receive medical care (Golzari et al., 2006; Hammett, Gaiter, & Crawford, 1998).

That being said, there is a great deal of variation in the health services provided to juveniles in the justice system (Acoca et al., 2014), which means the care these youths have access to while incarcerated may be inadequate. Sedlak and McPherson (2010, p. 5) states that "there is no universal standard of care" in juvenile residential facilities, and that "unmet needs of the population in custody are significant." Having administered a survey, they found that 36 percent of youth respondents indicated they had not received all the medical care they needed while in custodial care. One study found a relationship between race and health care services within juvenile residential facilities: facilities with higher proportions of Black juveniles were more likely to have lower quality health service provision (Hancock, 2014), suggesting further issues with health care access for delinquent youth of color.

Additionally, being detained can cause problems with the juvenile's insurance, especially for low-

income youth. For example, while youth may be enrolled in Medicaid while detained in a juvenile justice facility, Medicaid will not cover their cost of care (Acoca et al., 2014). Many states have terminated Medicaid benefits for incarcerated individuals rather than suspend them (COA, 2011). This means medical care in facilities must be funded by state and local monies, limiting what can be offered. Another health coverage option is the Children's Health Insurance Program (CHIP), but involuntary detention is a disqualifier for this program (Acoca et al., 2014). This "inmate exclusion" to these programs means the very status of being detained can serve to decrease access to health care for justice-involved youth. When incarceration results in termination of a youth's enrollment in these programs, there may be a period of time after the youth's release when they have not reenrolled (Acoca et al., 2014; COA, 2011), resulting in gaps in health care service and poor continuity of care between custodial facilities and the community. Multiple studies have indicated that continuity of care, especially upon release, has been historically challenging (COA, 2011; Potter, 2014).

### *Health, delinquency, and the community*

The health issues of the delinquent population are of concern to both the juvenile justice system as well as the larger community for a number of reasons. First, while there is little empirical research on the topic (Potter, 2013), it is possible that physical health issues are closely related to delinquent behavior. Woods, Farineau, and McWey (2013) found chronic illness and delinquency to be related, while Gortmaker, Walker, Weitzman, and Sobel (1990) found a link between chronic illness and behavioral problems. Poor health can be related to stress, cognitive issues, and poor emotional well-being (Woods et al., 2013), which in turn can influence behavior. As such, it is possible that improving the health of the delinquent youth population can reduce delinquent behavior and thus improve community safety. Hancock (2017) found that the quality of health care provision in juvenile residential facilities was inversely related to recidivism, meaning facilities with better health service provision had fewer juveniles recidivate after release. In another study, Kim et al. (1997) found that provision of adequate health services to women after release from prison was related to lower levels of recidivism.

Moreover, most incarcerated juveniles are in custodial care for brief periods of time; the vast majority will return to the community (Staples-Horne, Duffy, & Rorie, 2007). Given that research has shown communicable diseases to be more prevalent in incarcerated populations (Conklin et al., 1998), improving healthcare within juvenile institutions and providing better continuity of care upon release can also help prevent the spread of communicable diseases within institutions and, upon the juveniles' releases, to the larger community. An ultimate result is the improved health of the entire community.

### **Research Purpose**

There is a dearth of empirical research on the health service utilization of youth involved in delinquent behavior, especially preventative, pre-incarceration services; of the little research that does exist, the focus is on incarcerated youth. There is also virtually no research specifically on the barriers to services for the delinquent youth population; the existing research focuses on adults or low-income individuals in general. Finally, there is a lack of research on the connection

between the use of substances and health service utilization. This research served to create a survey instrument that could be used in future research to study preventative health service utilization, access, and barriers in the delinquent juvenile population. An improvement in provision of, access to, and utilization of preventative health care services is an important issue that can possibly help prevent delinquency and improve general community health.

## **Method**

### *Sample*

The pilot study, which collected data by administration of a survey, was conducted in 4 public elementary schools and one public middle school in a Kentucky county.<sup>3</sup> This county has a population of about 78,000 and is largely rural, with agriculture being a major industry. The public school enrollment is approximately 1,200 with half of students being female and 47% of students being minorities. In addition, 69% of public school students in the county are reported to be economically disadvantaged. The county seat also reports rates of violent and property crime that are higher than average for the state. A total of 1349 surveys were distributed. Of these, 21 (1.56%) were completed.

### *Procedure*

The survey consisted of two questionnaires—a parent/guardian questionnaire and a student questionnaire. The parent/guardian questionnaire had questions regarding the child's demographic information and the child's preventative healthcare utilization because the children may not know much of this information. The child questionnaire contained questions about their justice involvement and delinquent behavior.

Students from ages 10 to 14 (about 5<sup>th</sup> through 8<sup>th</sup> grade) in the 5 participating schools were given a survey packet to take home to their parents. The survey packets included the parental consent form, the parent survey, the child survey (for parent review), and a self-addressed stamped envelope. Parent surveys and the parental consent form were received through the mail and the corresponding students were identified and their names compiled. Survey dates were then established with the schools. The child survey was conducted in a separate room at each school with all the participants from that school at once. Anonymity and confidentiality were assured and assent was obtained as a group. Researchers were available to answer child subjects' questions about words and questions on the survey.

### *Variables*

(a) Preventative health service utilization: The parent questionnaire asked a series of questions about the child's use of preventative healthcare services. These questions covered variables such as whether the child saw a doctor regularly, whether the child was on any medications, whether the child had been referred for certain exams and screenings (i.e. mental health, dental care, vision, hearing, etc.), whether they had received the screenings, and on what vaccinations the child was

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<sup>3</sup> It should be noted that the researchers initially attempted to obtain a sample through the Kentucky court system, but confidentiality issues resulted in this not being a feasible option at the time the pilot study was conducted.

current. In addition, the questionnaire asked about barriers to services. If the child had not received a screening or vaccination, parents were asked why the child had not. Options given included fear, transportation issues, scheduling issues, referral issues, cost, awareness, availability in the community, not wanting the child to miss school, and an option to write in another reason.

(b) Delinquent behavior: The portion of the child questionnaire that asked about drug use and other delinquent behavior was loosely modeled after the Monitoring the Future survey.<sup>4</sup> There were a series of questions asking whether the child had engaged in various deviant behaviors including damaging property (“have you ever damaged property of others on purpose?”), truancy (“have you ever skipped school without permission?”), running away from home (“have you ever run away from home?”), stealing (“have you ever taken something worth under/over \$50 without paying for it?”), robbery (“have you ever used force to get money or property from someone?”), and assault (“have you ever hit or seriously threatened someone?”). All of these questions were phrased using age appropriate language (i.e. “have you ever hurt somebody enough for them to need a doctor?”). Similarly, there was a series of questions asking the child whether they had been arrested for various things including theft, assault, burglary, selling or using drugs, skipping school, and running away from home. As with the previous set, these questions used age appropriate phrasing.

The child questionnaire also included a series of more specific questions about drug use. The subjects were asked how often they had used various drugs in the last year and in the last month. The subjects were asked about marijuana, inhalants, other illegal drugs, and prescription medications not prescribed to them by a doctor.

(c) Justice involvement: The child questionnaire asked how many times the child had been arrested as well as how old they were when first arrested (if they had been). Subjects were also asked if they had participated in a diversion program, been sentenced to probation, or had been sentenced to a residential program. As with other questions on the child questionnaire, age appropriate language was used.

(d) Demographics: The parent questionnaire asked close-ended questions about the child’s race/ethnicity, sex, grade in school, disability status, and family income. In addition, questions asked about how the family pays for healthcare, whether the family received state benefits in the last year, and whether the child had ever been in foster care.

*Table 2 Variables*

<b>Variables</b>	<b>Sample Survey Question(s)</b>
Preventative health service utilization	Parent Survey: <ul style="list-style-type: none"> <li>- How does your family pay for your healthcare?</li> <li>- Does your child have a doctor he/she sees regularly?</li> <li>- Please identify whether or not your child has been referred for the following age appropriate screenings</li> </ul>

<sup>4</sup> Monitoring the Future is study that began in 1975 that involves the annual administration of surveys to a sample that includes 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> grade students. The survey includes many questions about drug use and other behavior (monitoringthefuture.org)

	and, if referred, did your child get the screening. - What vaccinations is your child up to date on?
Delinquent behavior	Child Survey: - Have you ever damaged property of others on purpose? - Have you ever skipped school without permission?
Justice involvement	Child Survey: - How many times have you been referred to the court/arrested?
Demographics	Parent & Child Surveys: - Age, gender, grade in school

### *Analyses*

The study used SPSS v. 25 (IBM, 2017) to conduct the statistical analyses. The pilot study sought to address three research questions: (1) Is there a correlation between preventative health care utilization and juvenile delinquent behaviors? (2) Is there a correlation between the number of barriers to access preventative health care and juvenile delinquent behaviors? and (3) Are there correlations between drug use and severity of offenses and health care utilization? Research question 3 was not analyzed as the student participants did not self-report drug use or arrests/offenses.

### **Results**

#### *Sample characteristics*

The child participant demographics regarding race/ethnicity were 43.5% White (n = 10), 30.4% Black or African-American, 4.3% Asian (n = 1), 21.7% were of two or more races (n = 5). The child participants were 56.6% female (n = 13) and 43.5% male (n = 10). The child participants' grade level breakdown was: 30.4% fifth grade (n = 7), 39.1% sixth grade (n = 9), 8.7% seventh grade (n = 2), and 21.7% eighth grade (n = 5). The child participants' disability status was 82.6% do not have a disability (n = 19) and 17.4% (n = 4) have a disability.

The family demographics regarding family household income breakdown was 4.3% no income (n = 1), 26.1% less than \$19,999 (n = 6), 21.7% earned between \$20,000 and \$29,999 (n = 5), 17.4% earned between \$30,000 and \$49,999 (n = 4), 4.3% earned between \$50,000 and \$74,999 (n = 1), 13.0% earned between \$75,000 and \$99,999 (n = 3), and 13.0% preferred not to answer this income question (n = 3). The family insurance status was 21.7% had health insurance provided by their employer (n = 5), 13.0% purchased their own health insurance (n = 3), 4.3% had Veteran's Association (VA) health insurance (n = 1), 43.5% had Medicaid (n = 10), 8.7% had insurance for their child through the Kentucky Children's Health Insurance Program (KCHIP) (n = 2), 4.3% had

TRICARE (n = 1), and 4.3% had Other insurance (n = 1). The family participants' breakdown for state benefit usage was 43.5% have never been on state benefits (n = 10), 4.3% were on state benefits in the past 12 months but not currently (n = 1), and 52.2% were currently on state benefits (n = 12). The family participants reported that 91.3% have not had their child in the foster care system (n = 21) and 8.7% had their child in the foster care system more than a year ago (n = 2).

### *Findings on research questions*

Research question 1 had two portions analyzed in relation to preventative health care utilization and juvenile delinquent behaviors – age appropriate screenings and vaccination rates. A Pearson product-moment correlation coefficient was completed to assess the relationship between age appropriate screenings a child received and juvenile delinquent behaviors. There was no correlation between the two variables [r = 0.272, n = 23, p = 0.209]. A Pearson product-moment correlation coefficient was completed to assess the relationship between the vaccinations a child received and juvenile delinquent behaviors. There was no correlation between the two variables [r = 0.003, n = 23, p = 0.990].

Research question 2 also had two portions analyzed to determine an association between barriers and juvenile delinquent behaviors – barriers to age appropriate screenings and barriers to vaccinations. A Pearson product-moment correlation coefficient was completed to assess the relationship between the barriers parents faced in accessing age appropriate screenings and juvenile delinquent behaviors. There was no correlation between the two variables [r = 0.269, n = 23, p = 0.214]. A Pearson product-moment correlation coefficient was completed to assess the relationship between the barriers parents faced in receiving vaccinations for their child and juvenile delinquent behaviors. There was no correlation between the two variables [r = 0.206, n = 23, p = 0.347].

(a) Barriers: Eight parents answered the barriers question for age appropriate screenings. Parents were able to select all barriers as they applied. Parents identified barriers to seeking age appropriate screening being their child missing school, unaware of age appropriate screenings, doctor's office being inaccessible, the referral process, cost, fear, inconvenience, and no need to receive the screenings.

Six parents answered the barriers question for vaccinations. Parents were able to select all barriers as they applied. Parents identified barriers to receiving vaccinations as missing school, referral process, cost, fear, schedule inconvenience, and elect not to receive vaccinations.

(b) Age Appropriate Screenings & Vaccinations: The most common age appropriate screenings participants received were dental and vision examinations. The most common vaccinations participants received were tetanus, diphtheria, and pertussis (TDaP), Varicella (chickenpox), measles, mumps, and rubella (MMR), Hepatitis B, and Meningococcal (meningitis). The vaccinations participants received least were influenza and HPV. The most common vaccinations participants received are the ones required to enroll in public schools per the Commonwealth of Kentucky's Cabinet for Health and Family Services (CFHS) website (CFHS, 2017a).

(c) Delinquent Behaviors Reported: The most common delinquent behavior reported was fighting. Seven student participants reported participating in a physical altercation. Three student participants reported running away from home at age 11. Two student participants reported stealing something worth under \$50. One student participant reported stealing something worth more than \$50. One student participant reported using force to get money or property from someone. Two student participants reported hitting or seriously threatening someone.

*Table 3 Delinquent Behaviors Reported*

<b>Delinquent Behavior</b>	<b>Number of students participated in delinquent behavior</b>
Physical altercation	7
Running away from home	3
Stealing something worth under \$50	2
Stealing something worth more than \$50	1
Used force to get money or property from someone	1
Hitting or seriously threatening someone	2

## **Discussion**

The purpose of this pilot study was to create a survey to address three research questions: (1) Is there a correlation between preventative health care utilization and juvenile delinquent behaviors? (2) Is there a correlation between the number of barriers to access preventative health care and juvenile delinquent behaviors? and (3) Are there correlations between drug use and severity of offenses and health care utilization? During the time the researchers were conducting the child surveys, any question or clarification the student participant had was answered and then noted to ensure changes were made to the survey moving forward. A number of limitations were identified.

While respondents were not heavily involved in delinquent behavior, a significant number of them had engaged in such behavior, ranging from truancy and minor theft to robbery. In addition, some important barriers to preventative health care were identified, including missing school, cost, and schedule issues. The fact that the most common vaccinations were ones required to attend school suggests preventative health care use may stem from legal mandates and that more education about the importance of preventative health care is necessary. Importantly, researchers were able to assess which questions caused confusion for students in order to improve the survey for future use.

The survey questions have been revised to incorporate the feedback from the students involved in the pilot study. For example, “on purpose” was added to a question about use of inhalant use and questions regarding marijuana use was changed to incorporate nicknames for the drug, such as “weed.” Other questions added after the pilot study are aspects missing from the Kentucky Incentives for Prevention (KIP) Survey and the National Survey on Drug Use and Health (NSDUH), such as “how often do you use drugs with your parents?” The addition of these questions were also supported by informal conversations with students. Additional aspects the researchers identified as missing were questions about awareness of and barriers to community resources and qualitative questions about stigma and substance use. Further, results suggested a number of implications regarding the implementation of the WSCC model. The Whole School, Whole Community, Whole Child (WSCC) framework should provide all of the resources for early

intervention when a substance use or juvenile delinquency issue is identified; thus, providing the coordination of services to decrease juvenile delinquency.

One of the unique aspects of the Kentucky education system is the Family Resource and Youth Services Centers, which has the role of removing non-academic barriers to learning as a means to enhance student academic success (Cabinet for Health and Family Services, 2017b). Non-academic barriers can be food, running water, or clothing. The Family Resource and Youth Services officers provide social services and serve as an extra contact point for family engagement. However, one of the aspects that seems to be lacking is the counseling and psychological services.

Since substance use can be related to an individual self-medicating a mental illness or other health issue (Harris & Edlund, 2005), which can contribute to delinquent behavior, it is important to provide counseling and psychological services in the school system. Counseling, psychological, and social services is an aspect of the WSCC framework. These services need to be strengthened to prevent a vulnerable student population, such as juvenile justice-involved youth, from dropping out of school or ending up incarcerated. Some schools have partnered with private counseling organizations to assist them in working with students with substance use issues; for example, Calloway County High School (CCHS) partnering with Emerald Therapy Center (CCHS, 2019).

The main limitation of this pilot study was low participation among school districts. The pilot study was conducted during an even-year in Kentucky. The majority of school districts had already participated in the KIP survey and subsequently elected not to participate. There was also low participation among students in the school district that participated in the pilot study. Another limitation is the potential of missing our target audience, juvenile justice-involved youth, due to truancy, or youth participants not wanting to disclose their behaviors on the survey. In addition, delinquency is correlated with family factors such as uninvolved parents, suggesting that parents of the justice-involved population may be less likely to sign consent forms.

### **Conclusion**

Due to low participation numbers, results of this pilot study cannot be generalized. However, insights can be drawn from the barriers identified by the parents to ensure their child receives age appropriate screenings and vaccinations. School health services, such as school nurses, can alleviate some barriers, like students missing school, cost, inconvenience, and inaccessible doctor's offices. In addition, using the Whole School Whole Community Whole Child (WSCC) model to address health in the schools provides all of the necessary resources to address juvenile delinquency, including substance use issues.

*Graphic 1 Whole School, Whole Community, Whole Child Framework*



Source: <https://www.cdc.gov/healthyschools/wsc/index.htm>

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## **Self-Esteem through Exercise: “Health & Fitness for All” Including Individuals with Intellectual and Developmental Disabilities**

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### **Abstract**

Individuals with disabilities often suffer from health disparities, including obesity and depression. The purpose of this presentation is to describe Health & Fitness for All, a community-based program which incorporates exercise, universal design, and health coaching for individuals with intellectual and developmental disabilities to encourage a healthy lifestyle. Partnering with the Human Development Institute at the University of Kentucky, the curriculum focus for the month of September was exercise. The overall goal was to develop weekly exercise activity for people with intellectual and developmental disabilities, their families, neighbors and friends. Objectives were threefold: introduce participants to varying forms of exercise, demonstrate these exercises and activities in public spaces, and initiate a health coaching dialogue. The following four sessions were implemented: 1) exercise scavenger hunt at the Kentucky Arboretum; 2) hiking and strength training at the Legacy Trail; 3) circuit training and yoga at a local park; and 4) cycling and basketball at a local YMCA. Universal design in the form of letters, numbers, images and stick figures were used for signage. Activities encouraged self-efficacy and relationship development. All sessions included a greeting and introduction from each participant, a warm-up, free choice exercise and partners when required, and a cool-down. Benefits of each exercise were discussed informally during the group activity. Health coaching questioning was posed to the group both pre- and post-activity. Questions included: How do you feel now (pre-activity)? How do you feel when you exercise? What is your favorite exercise? Would you do this type of exercise again? How do you feel now (post-activity)?

## Implementation of Field-to-Fork After-School Programs in Elementary Schools in Kentucky

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### Abstract

This research project is an evaluation case study of the Food Literacy Project's Field-to-Fork Program in two elementary schools located in Louisville, KY. The effectiveness of experiential education programs on improving children's and caregivers' food literacy, food access and health behaviors was measured. The overall goal of this program is to promote healthy lifestyles for the prevention of childhood obesity among children in elementary schools located in low-income Louisville neighborhoods. The intervention is driven by the social cognitive theory of behavior change and the community organization theory. The field-to-fork clubs are 10-week programs for 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> graders. The programming includes student preparation of healthy recipes with seasonal fresh produce. Students explore all aspects of wellness (nutrition, gardening, cooking classes, physical activity, family engagement and weekly take-home challenges). Parents participate with club members for the second five weeks to learn about nutrition, healthy foods, gardening, farming and cooking with their child. The program evaluation included the administration of pre- and post-program surveys to evaluate nutritional proficiency and daily physical activity of youths. The findings of the study suggest that school based programs are an effective method of providing experiential nutrition education for students and caregivers. In addition, experiential education and access programs can help children improve health behaviors related to consuming healthful foods. The intervention is distinctive in using experiential education and fresh fruit/vegetable access programming to connect underserved youth and families with fresh foods, the people who grow it, the land, and each other. Ultimately, this project creates a replicable model for addressing childhood obesity and builds a stronger local food system by empowering students and their families to organize and lead in making lasting lifestyle and community change.

*Key Words:* field-to-fork clubs, elementary students, health behaviors, food literacy

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## Using Food Challenges and Online Cooking Videos in a College Nutrition Class as a Strategy for Healthy Behavior Change

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### Abstract

A social cognitive theory framework was used to evaluate the effectiveness of goal-oriented activities in a nutrition class in promoting healthy lifestyles of college students. Research has shown that interventions should include education and self-regulation components (goal setting and self-monitoring) and activities to promote self-efficacy for healthy eating to maximize dietary intake outcomes. Students (158) registered in Human Nutrition classes (face-to-face and online) participated in the study. In addition to the traditional approach of lectures, goal-oriented activities were included in the class. The students participated in food challenges to help translate nutrition knowledge into behavior change. The food challenges included: eat when hungry, control portion size, eat more fruits and vegetables, decrease added sugar, increase healthy fats, shake the salt habit, increase calcium intake, choose healthy snacks and cook with herbs and spices. Tips to meet the challenge and several cooking videos accompanied each challenge. A pre- and post-intervention model was used. Data collection included beginning/end of course surveys, reflections and three-day diet analysis. Surveys assessed student attitudes, behavior and self-efficacy in cooking and eating healthy food. The surveys were based on validated and published questionnaires. Students discussed their experiences in weekly reflections, and reflected on their assumptions, barriers, changes in cooking, shopping and eating behavior and future goals to improve personal health in a final reflection. The three-day diet analysis project included analysis, goal planning, implementation and reflection. Preliminary findings based on student reflections and diet analysis projects showed positive changes in student attitudes and cooking self-efficacy.

*Key Words:* eating behavior, college students, food challenges, cooking self-efficacy

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