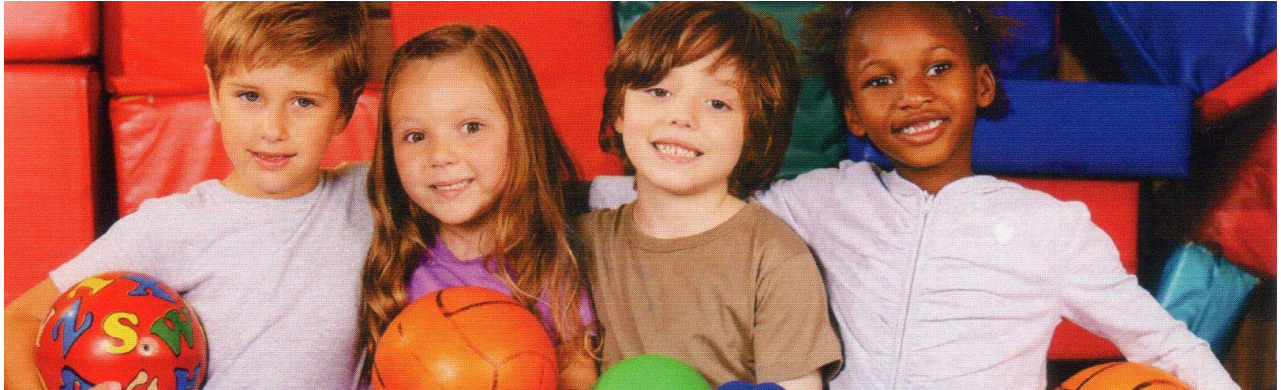


2023 Spring

# Kentucky SHAPE Journal



**Ky SHAPE**   
teaching students to thrive for life

**[Kentucky SHAPE JOURNAL]**

Volume 60, Issue Number 2  
ISSN: 2333-7419 (Online Version)  
ISSN: 1071-2577 (Printed Copy)

# Kentucky SHAPE Journal

## Volume 60, Issue 2, 2023 (Spring Issue)

ISSN: 2333-7419 (Online Version)

ISSN: 1071-2577 (Printed Copy)

---

### TABLE OF CONTENTS

#### (Peer Reviewed Articles)

The Potential and Viability of Avitourism in Rural Kentucky .....9 <i>(Lemmon &amp; Bradley)</i>	
Programmatic Accreditation in Sport Management and the Absence of Perceived Quality .....20 <i>(Corr &amp; Stokowski)</i>	
The Use of Strict Liability in Healthcare: Should Hospitals be Held Responsible? ..... 33 <i>(Moberly)</i>	
Waterparks' Economic Impact on Rural Kentucky Communities ..... 41 <i>(Bradley, Sims, &amp; Maples).</i>	
Where did you learn that? Exploring How Sources of Knowledge Shape Leave No Trace Knowledge in Kentucky's Red River Gorge Rock Climbing Community..... 51 <i>(Maples, Bradley, &amp; Sharp).</i>	

#### (Peer Reviewed Abstract)

True Play, Movement, and Reflection: Equitable Access to a Mobile Pop-Up Program Facilitating Play and Movement for Diverse Populations ..... 70 <i>(Vigil &amp; Rogers).</i>	
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

**2023 Board Members of KY SHAPE**

President	LaDonda Porter
President-Elect	MeMe Ratliff
Past-President	Gavin Washington
Executive Director	Jamie Sparks
Physical Education	Robin Richardson
Physical Education-Elect	Crystal Bratcher
Health	Mary Jo Geddes
Health-Elect	Kara Young
General	Lauren Willis
General- Elect	Kelly Rogers
Dance	Linda Rucker
Dance-Elect	Jamie Powell
Sport and Leisure	Theo Bellamy
Sport and Leisure- Elect	Justin Nichols
At Large West	Eric Moore
At Large West	Jamie Neal
At Large East	Michelle Thomton
At Large East	George Salyers
Health Moves Minds Coordinator	Angela Stark
Health Moves Minds Coordinator	Catie Embry
Student Representative	Robert Immell
Necrology	John Ferguson
Awards Chair	Kim Demling
JCPS Liaison	Meme Ratliff
Administration Liaison	Jessica Napier
Journal Co-Chair	Steve Chen
Journal Co-Chair	Gina Gonzalez
Journal Co-Chair	Tricia Jordan
Exhibits Chair	Billie Stone
Secretary/Treasurer	Stephanie Bunge
Convention Manager	Stephanie Bunge

## A Message from the Kentucky SHAPE President

Greetings KYSHAPE colleagues! I am so honored to serve as your 2022-2023 KYSHAPE president. I never imagined that I would be in this position when I think back to being an undergraduate at UK. This amazing organization works so hard to provide support to all those involved in health, physical, recreation and dance. This is a true reflection of our theme "Move Thrive!" A big thank you to Dr. Steve Chen, Dr. Tricia Jordan, and Dr. Gina Blunt-Gonzalez for serving as our KY-SHAPE Journal co-editors and for providing their time and commitment to this publication that serves as a valuable publication to all KYSHAPE members.

**BEAUMONT PHYSICAL EDUCATION**

*LaDonda Porter*

**PHYSICAL EDUCATION TEACHER  
ATHLETIC DIRECTOR  
INTRAMURAL DIRECTOR  
FCPS SECONDARY CONTENT SPECIALIST  
2018 KYSHAPE TEACHER OF THE YEAR  
2020 SHAPE AMERICA DISTRICT TEACHER OF THE YEAR  
2022 KYSHAPE PRESIDENT-ELECT**

ladonda.porter@fayette.kyschools.us  
website: <https://bit.ly/3cMqM9s>  
(859) 381-3094  
2080 Georgian Way, Lexington, KY 40504

## Acknowledgement

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

Dr. Jennifer Mak, Marshall University, Dr. Steve Shih-Chia Chen, Morehead State University, Dr. Bo Shi, Morehead State University, Dr. Chris Croft, University of Southern Mississippi, Dr. Raymond Poff, Western Kentucky University, Dr. Allie McCreary, Western Kentucky University, Dr. Eric Knackmuhs, Western Kentucky University, Dr. Raglena T. Salmans, Eastern Kentucky University, Dr. Tricia Jordan, Western Kentucky University, Dr. Kristi King, University of Louisville, Dr. Caroline Frye, University of Louisville. Dr. Chase M. Smith, Southern Indiana University, and Dr. Dexter Davis, University of Tennessee, Martin

Sincerely,

Dr. Tricia Jordan, Kentucky SHAPE Co-Editor  
Dr. Gina Blunt Gonzalez, Kentucky SHAPE Journal Co-Editor  
Dr. Steve Chen, Kentucky SHAPE Journal Managing Editor

## Kentucky SHAPE Journal Submission Guideline

### SUBMISSION OF A PAPER

The *Kentucky SHAPE Journal* (formerly *KAHPERD Journal*) is published twice yearly (spring and fall) by the Kentucky SHAPE. 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 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 one of the co-editors below based on the topic (nature) and discipline of the study:

- For an article related to health and physical education, health promotion, exercise science and exercise physiology, please email the submission to Gina Gonzalez: [ggonzalez2@saybrook.edu](mailto:ggonzalez2@saybrook.edu)
- For an article related to recreation and sport management/administration, sport sociology, and sport coaching, please email the submission to Tricia Jordan ([tricia.jordan@wku.edu](mailto:tricia.jordan@wku.edu))

#### Deadlines:

Spring issue—March 1

Fall issue—September 1

Estimated publishing time: Spring issue—Mid May & Fall issue—Late November

### 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.

### FORMAT AND STYLE

When preparing manuscripts for publication in the *Kentucky SHAPE Journal*, authors should follow the guidelines set forth in the *Publication Manual of the American Psychological Association*, Seventh Edition, 2019. Manuscripts should not be submitted for publication elsewhere at the same time being reviewed by *Kentucky SHAPE Journal*. Authors are advised to proof the typing, and check references for accuracy. Articles should include an abstract of approximately 150 words including the rationale for the study, methods used, key findings and conclusions. Manuscripts should not exceed 20 double-spaced pages (not including references, tables, and figures).

The manuscript must be typed double-spaced, including the abstracts and references; please number each line. 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; please clearly mark where the tables/figures belong in the text. 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.

### **CONTENT**

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

#### **Research Manuscripts**

Research articles should be well-grounded conceptually and theoretically, and be methodologically sound. Qualitative and quantitative pieces of research are equally appropriate. Formatting suggestion: Introduction, Literature Review, Methodology, Results, & Discussion, Conclusion, and Implication.

#### **Book Reviews**

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**

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.

#### **Case Studies**

The purpose of using case studies in learning environments is to stimulate critical thinking. Such thinking skills as problem-solving, decision-making, creative thinking, visualizing, knowing how to learn, and reasoning should be stimulated as your case is discussed in learning environments. The guidelines found below provide authors guidance in writing case studies for publication in the *KAHPERD Journal*:

1. Use narrative form when writing your case(s). Consider telling a brief story about a controversial or problematic issue or incident in the field of discipline selected from the list of suggested subject areas, competencies, and educational levels. The story could, for example, illustrate principles or theories, describe events, and/or address problems or situations related to the topic(s) you choose. You may include data to be analyzed or illustrated. Include a key character with a problem or dilemma to solve. Within the case, the key character may or may not attempt to solve the issue within the case.

For Example:

<b>Suggested Subject Area</b>	<b>Competencies</b>	<b>Focus</b>	<b>Educational Level</b>
Alcohol sponsorship and sales at collegiate venues	Diversity, ethics, decision making, social responsibility	Sport Management	Undergraduate, Graduate, or both
Class management	Leadership, strategic planning, communication	PE	Undergraduate, Graduate, or both
Design of fitness programs	Scientific training, First Aid training, sport psychology	Exercise science	Undergraduate, Graduate, or both
Tourism economic impact study	Economy, analytic skills, event planning	Recreation	Undergraduate, Graduate, or both
Developing a weight watching program	Nutrition, exercise knowledge, motivation....	Health, and health promotion	Undergraduate, Graduate, or both
Preparing a dance gala	Strategic planning, event management, dance performance	Dance	Undergraduate, Graduate, or both

2. The case can be based on reality or fictional scenario. It can also evolve from one's own or others' actual experience. It can be deeply personal and reflective, yet it should be written objectively. The case is intended to simulate real life; therefore, the case does not have to be unrealistically neat. Rather, the issue can be messy and complex.
3. Case authors should provide questions and solution ideas. Often, when writing and discussing case(s), it is advised to allow readers to discuss analyses and compromise, make their own interpretations, and draw their own inferences regarding solutions. Although solutions may not always extensively included, case authors are encouraged to cover detailed solutions that helps educators discuss the cases in a more informed and insightful way with students.
4. To provide an optimal learning opportunity through the case(s), four elements should be included in the case study submission:
  - a. Abstract and learning objectives: a summary of case and its purpose, learning outcomes and applications (75-150 words)

Fill in the following boxes

Suggested Subject Area	Competencies	Focus	Educational Level

- b. Introduction of case: presentation of issues, challenges, problems, and various thoughts
- c. Teaching notes: addressing discussion questions, guidelines for discussions, and pros and cons of different solutions
- d. References

### SUBMISSIONS AND REVIEW PROTOCOL

Submission of a paper to the publication implies agreement of the author(s) that copyright rests with *Kentucky SHAPE Journal* when the paper is published. *Kentucky SHAPE Journal* will not accept any submissions that are under review with other publications. All manuscripts submitted will be peer-reviewed by 2 to 3 professionals/experts. Authors will normally receive a decision regarding publication within six to eight weeks. Rejected manuscripts will not be returned.



**(Peer Reviewed Article)****The Potential and Viability of Avitourism in Rural Kentucky**

*Zach Lemmon, Eastern Kentucky University*

*Michael Bradley, Arkansas Tech University*

**Abstract**

Birding represents an opportunity for tourism, education, conservation, and inclusivity. As a form of ecotourism, avitourism seeks to be a sustainable and ethical form recreation that benefits local communities. Conservation of birds and their habitat is key to the idea of avitourism, however, human effects can lead to harmful disturbances. The local human communities can see great benefits from avitourism, mostly in the form of job opportunities and development. There is no guarantee for this, as avitourists may represent a wealthy demographic which may influence local business structure. A need for more inclusivity is noted as being important to growth of the activity of avitourism, especially if it is expected to grow in areas such as Appalachia, where there is a history of unsustainable practices with the region's natural resources. Avitourism represents more sustainable option for the area and potentially aid in filling a gap left in the economy by less sustainable practices. This paper will highlight the known affects and potential of avitourism to determine how rural Kentucky may possibly benefit and implement avitourism.

**Keywords:** Avitourism, Ecotourism, Sustainable Tourism, Birding, Inclusivity, Conservation

**Introduction**

Birdwatching, or birding, is the recreational activity of observing birds (Dune, 2003). It represents a widely popular recreational activity with 45 million Americans taking part in some capacity (United States Fish & Wildlife Service [USFWS], 2019). Further, it contributes to a large part of the outdoor recreation economy, as Americans spend \$5.8 billion dollars between equipment (e.g., binoculars & spotting scopes) and bird feed annually (USFWS, 2019). With recent trends showing growth in the birding community and the large economic factor the activity poses, it has become increasingly important to understand the role birding plays in communities and environments.

Birding influences human and avian communities, these impacts can manifest as benefits or detriments. However, birdwatchers on average tend to be well-educated, wealthy, and committed (Sekercioglu, 2002). Well-educated and committed birders are more likely to bring positive impacts but balancing recreational activities with conservation efforts in a sustainable manner always poses a challenge (Thomas & Reed, 2019). With birders being among the most sensitive to nature conservation (Hvenegaard & Dearden, 1998a), sustainability is likely at the forefront of these individuals minds already. This further reiterates how birding is overall more beneficial for visitors and the local region. Humans get the normal associated benefits of recreation, such as physical activity, reduced stress, and strengthened communities, and social bonds (National Park

Service, 2005). Meanwhile, avian communities gain the support of interested and committed individuals to help influence conservation policy and participate in citizen science.

Avitourism (birding tourism) represents a smaller, more specific subgenre of birding; travel motivations centered on birdwatching is what makes it distinct (Steven et al., 2014). Avitourism also represents a specialized sector of nature-based/ecotourism. Ecotourism is defined by the International Ecotourism Society as “Responsible travel to natural areas that conserves the environment and improves the well-being of local people” (Honey, 2008). Contributions to avitourism beyond just local birdwatching include increasing disposable income and travel becoming more affordable (Cordell & Herbert, 2002; Sekercioglu, 2003). With bird watching becoming an increasingly popular recreational activity (USFWS, 2019), the need for a deeper understanding of this niche market is recognized (Cordell & Herbert, 2002). With any leisure activity, an individual’s initial involvement can be an important life event. In Europe, Randler & Marx (2022) found that social influence, nature experience, bird-center triggers, education, and emotion are among the most common reasons for initial involvement in birding.

Avitourism has also been promoted for its role in conservation. This is in large part due to the enthusiasm for birds lending itself to its hobbyists wanting to support and protect the environments in which the birds live (Biggs et al, 2011). Given that bird watchers are more likely to be higher educated, they are also more likely to make efforts to reduce environmental impacts (Sekercioglu, 2002). In part due to the high commitment of birder watchers, they are one of the most environmentally conscious user groups in ecotourism and help to provide economic hope to many threatened natural areas worldwide (Cordell & Herbert, 2002). This fact also brings attention to the economic benefits of birding and avitourism. Avitourism is a useful tool in the development of rural areas, particularly in lower- and middle-income countries (Hvenegaard & Dearden, 1998b). This could come from the need for infrastructure to support tourism, along with the need for local wisdom of the area. These help support the presence of local species of birds. As a form of tourism, avitourism means bringing outside wealth into local areas, providing a boon to local economies.

One question is how the Commonwealth of Kentucky can better bolster its position in the avitourism community. Being in a temperate climate means that Kentucky does not have the same diverse and rare species of birds that avitourists may find in areas like the tropics. However, the state does feature its own endangered natural areas and exists within a migration zone that gives the area potential to see uncommon birds. This could possibly be leveraged for the economic and conservation benefit of the state through the use of birdwatching events and festivals (Lawton 2009; Measells & Grado, 2007). Since Kentucky is not a well-established birding location, there is a need for the justification and reasoning, which can prove to be a powerful tool in the state on multiple levels.

### **Literature Review**

In birding and avitourism, birds are observed or studied either with the help of visual enhancement equipment (e.g., binoculars, cameras, spotting scopes, etc.) or via the naked eye with photography

equipment and audio equipment to record images and bird songs also prevalent (Cobar et al., 2017; Istomina et al., 2016). In general, “birding” refers to watching birds in one’s “backyard” or local area, which is more common than avitourism. The difference is that avitourism is considered a more active form of the activity as it requires trips away from home (Kim et al., 2010). The global growth of avitourism can be seen through the influx of tourism companies that now offer and recommend avitourism experiences (Nicolaidis, 2013).

As previously discussed, avitourism is considered a form of ecotourism with its goal of conservation and stimulation of local economies aligning with the idea of ecotourism (Chen & Chen 2015). Speaking in a broad sense, tourism as a whole represents a large worldwide industry with many different sectors, one of which being ecotourism. Due to the nature of this, defining tourism becomes difficult, as pointed out in a 1991 issue of *The Economist* “There is no accepted definition of what constitutes the [tourism] industry; any definition runs the risk of either overestimating or underestimating economic activity (Elliott, 1991). At its simplest, the industry is one that gets people from their home to somewhere else (and back), and which provides lodging and food for them while they are away. But that does not get you far. For example, if all the sales of restaurants were counted as travel and tourism, the figure would be artificially inflated by sales to locals. But to exclude all restaurant sales would be just as misleading.”

While this quote focuses purely on the economic element of tourism, it emphasizes the complexity of tourism, the influence it has on society, and vice versa. This complexity extends to a relationship with other disciplines such as psychology, sociology, anthropology, geography, economics, etc. (Fennell, 2003). When speaking about ecotourism, disciplines such as conservation and sustainability become prevalent. Tourism has notably had a dynamic, if not controversial ability to alter perceptions and the overall setting of regions. As Fennell (2003) points out, tourism can provide for effective development of a region, this can cause negative disturbances to the ecological and sociological aspects of a region. This can be seen reflected in literature as the core themes of ecotourism research in Latin America are conservation, environment, and development (Lopez et al., 2022). Social aspects of ecotourism remain largely unexplored, with further exploration through research needed (Lopez et al. 2022).

The conservation benefits of ecotourism are among the most apparent when thinking of the effects of its activities. Evidence suggests tourism in areas that are protected contributes to avian conservation (Steven et al., 2013). Biggs et al. (2011) found that increased income through avitourism likely leads to conservation outcomes, but not on its own. A large part of how birdwatchers help in conservation is through data collection via “citizen science” projects that can contribute substantial knowledge about ornithological issues Sekercioglu (2002). Furthermore, ecotourism tends to occur on public lands that require fees or permits to enter. This usually funds the maintenance and development of natural resources (Beeton, 1998)

Ecotourism can provide an opportunity for local development and job creation. In South Africa, a bird guide training center was constructed in 2000 that provided a new opportunity for locals (Biggs et al., 2011). When birdwatchers travel and expect the trip to largely revolve around birding, they may seek companies or operators to organize transport or accommodations (Jones & Buckley,

2001), creating further opportunities for employment. Affluent birders bringing money to local economies increases job growth strictly for birding and increases development and job prospects in lodging and other service industries (Sekercioglu, 2002; Biggs et al., 2011). Ecotourists are also more likely to spend time in one area compared to traditional tourists, a fact that when paired with their average higher socio-economic status means the benefits they bring to local economies is increased (Beeton, 1998).

Within avitourism exists an opportunity to use a concept similar to flagship species. Flagship species are species that represent environmental causes (Primack, 2012). Flagship species are chosen for morphological or behavioral attributes that garner public sympathies in a way that raises awareness of what role they play and the value of an entire ecosystem (Krause, 2009). From this, it can be seen how flagship species can be valuable to avitourism by providing a symbol for environmental projects or political support (Krause, 2009). A flagship bird for avitourism could even be used to attract tourists to new regions.

A great example of the negative aspects of ecotourism is found in Brazil. An “ecological resort” threatened to displace villagers from their land through illegal private development (Fritsch & Johannsen, 2004). This problem is not unique to Brazil however, as indigenous peoples in other places like Bangladesh and Botswana have faced a similar loss of vital lands to “ecotourism” (Fritsch & Johannsen, 2004).

Another issue with ecotourism is that it can possibly betray its own intentions. This can be most easily seen that as an ecotourism site becomes more popular, the excessive visitor use could compromise the integrity of the natural area (Brophy, 2015). Specifically, with avitourism, disturbing the birds in their native habitat may become an issue. A 1985 review found that of 27 studies on the effects that wildlife observation and photography had on birds, 19 of the studies found a negative effect on birds (Boyle & Samson). Though later studies suggest photography may pose a greater risk of negative impact over simply watching (Tershy et al., 1997). Burger et al. (1995) notes some of the distinct forms of human disturbance that are unique to birdwatching include disturbance at all times of year (e.g., breeding, migration, wintering), approaching too close to nesting, roosting or migration layover sties, disturbing birds at specific breeding, foraging, and roosting sties, and overuse of taped vocalizations (potentially affecting behavior). Sekercioglu (2002) mentions that while birdwatchers do prove to be a palpable source of disturbance, if they conduct birdwatching in a proper manner, they pose a far preferable threat than consumptive activities (e.g., hunting) or exploitive, unsustainable activities.

Sekercioglu (2002) also mentions birdwatchers having a higher average income could lead to a demand of more luxurious accommodations, possibly transferring funds from the local community to outside entities that own luxury establishments. These luxuries could also be more demanding on resources, causing more ecological impact (HaySmith & Hunt, 1995). In Texas, it was found that avitourism can act as a “gateway” to more forms of tourism. As avitourists invest their time and money into the regions they visit, they become exposed to new culture, the history of the area, and more of the natural resources the region has to offer (Eubanks & Stoll, 1999).

While it may be suspected that negative impacts of tourism are most prevalent in the developing world, the developed world is not immune to this (Fennel, 2003). Tourism can be taxing on local resources, especially energy and water (Brophy, 2015). In particular, the travel and accommodations (e.g., hotels and food services) associated with tourism are problematic, causing mass CO<sub>2</sub> emissions and tourism contributing to 5% of total global energy consumption (Brophy, 2015). This becomes especially troublesome when speaking about avitourism and ecotourism, which seeks to be conservation friendly and sustainable (Brophy, 2015).

In Appalachia, outdoor recreation jobs are beginning to overtake extractive industries like coal (Maples et al. 2019). Previously, the Appalachian region had a dependency on these industries (e.g., the coal industry) in a way that made economic growth and resilience during times of economic change uncertain (Schuman, 2016). Further, these industries often left behind “sacrifices zones” (areas where environmental loss is experienced for economic gain) (Lerner, 2012) that have little appeal after the fact. Historically, nature tourism in Appalachia has largely been unregulated (Fritsch & Johannsen, 2004). This includes sustainable activities and ones that can be detrimental to the environment, such as the use unrestricted use of off-road vehicles (Fritsch & Johannsen, 2004). These further compound the environmental loss experienced in Appalachia, perhaps making sustainable nature tourism harder to implement.

In Kentucky, tourism had a total impact of \$11.2 billion in 2021 (Tourism Economics, 2022). Of this total, \$7.7 billion was direct visitor spending and resulted in 83,100 total jobs generated with \$808 million in state and local taxes generated (Tourism Economics, 2022). In terms of business sales food & beverage, retail trade, and lodging industries saw the most nominal dollars while food & beverage, lodging, and recreation & entertainment industries saw the most jobs created (Tourism Economics, 2022).

### **Describing Themes**

No original approach to economic development has become a prevalent answer to solving this issue of replacing the gap left by coal in Appalachia (Lewin, 2017; Vazzana & Rudi-Polloska, 2019). As Kentucky and the rest of Appalachia move away from a mono-economy reliant on coal, tourism proves to be a powerful tool in filling the gap left by the extractive industry.

In 2004 Fritsch & Johannsen made note of how Appalachia was at a crossroads when it came to tourism. As travel was becoming easier throughout the United States, tourism also began to increase. Nature tourism was a sector that held promise as Appalachia is home to a large amount of diverse flora and fauna, fulfilling different niches, notably the “charismatic megafauna” found in the region (e.g., deer, bears) and substantial salamander diversity found throughout the mountains (Swanson, 2018).

Fritsch & Johannsen (2004) pointed out several issues which may prevent effective nature tourism in Appalachia. To summarize, this mostly has to do with unregulated and unguarded natural areas and frequent littering and pollution. Sacrifice zones that leave little ecological value also likely play a role. In areas like Kentucky, it has been documented how the region has had an established

history of unsustainable uses of its natural resources. Whether this be the side effects of extractive industries like coal (Lerner, 2012) or more destructive recreation activities like those described by Fritsch & Johannsen (2004), such as the use of off-road vehicles. As avitourism is from of ecotourism the protection of natural environments and sustainable practices are integral to the industry. While avitourism itself can be a vector for conservation and sustainability, better practices must still exist beforehand to attract avitourists. Without large, protected areas it can be assumed that birdwatchers would have a more challenging time finding proper habitat to practice their activity.

It is often discussed how avitourism is restricted to the wealthy and educated (Mehmetoglu, 2007; Jones & Buckley, 2001; Sekercioglu, 2002). Further, birdwatchers tend to be an older community, with most birdwatchers being over the age of 55 and almost no teenagers partaking in the activity (Nicolaidis, 2013). Outdoor recreation can be contentiously argued as historically being the domain of white men (Allin 2004; Vaske & Lyon, 2014). This is further proven by the lack of non-male recreation users depicted in advertisements and media (Das et al., 2017; Noble, 2013; Gray, 2018). This is not surprising as barriers to entry in outdoor recreation can be high for many demographics. Age can influence outdoor mobility but is also linked to economic status (Perry et al., 2018). This possibly explains the linkage between the average age that Nicolaidis (2013) describes and the affluent characteristics that the literature points out.

These issues align with the contemporary issues noted in the literature of outdoor recreation which tend to reflect the current sociological, political, economic, and environmental issues of society but under a smaller scope (Manning, 2011). In the 21<sup>st</sup> century, the underrepresentation and discriminatory experiences of diverse groups is one such issue facing society and outdoor recreation (Hicks et al., 2020). This is further reflected in justice, equity, diversity, and inclusion being one the most common issues deemed important by outdoor recreation professionals (Harrison et al., 2022).

Diversification is important for an activity like avitourism which is still relatively new (Sekercioglu, 2002; Fritsch & Johannsen, 2004). Especially as avitourism is popular in regions that are not representative of the primary user group (Hvenegaard & Dearden, 1998a; Lopez et al., 2022). In Kentucky, diversification and inclusivity in avitourism could prove vital when establishing the region as a new area for the activity.

By reviewing literature, it apparent that avitourism (and ecotourism as a whole) is not perfect. While the potential of ecotourism is often discussed, the results can be mixed in practice, for the human and avian communities in Kentucky.

For birds, Sekercioglu (2002) points to an increase in visitor use could cause a disturbance to their normal function. This becomes possibly a more severe problem during periods where birds are nesting or migrating, as the birds will already be experiencing energy intensive situations. The increased visitor use could also lead to increased degradation of habitat. Balancing increased recreation use with conservation objectives can be difficult (Thomas & Reed, 2019).

For Humans, many of these negative aspects would be faced by the local population. While avitourism has the potential to bring prosperity to local areas through job and development opportunities, it can also cause local people to lose their land (Fritsch & Johannsen, 2004). There is also no guarantee development would be beneficial to the locals, as Sekercioglu (2002) discussed, a demand for more luxurious accommodations and services could lead to more outside entities gaining benefit from avitourism than local citizens.

### **Implications & Recommendations**

As it is now known, Kentucky has come far in terms of outdoor recreation since Fritsch & Johannsen (2004) wrote about the problems facing natural tourism in the state. A notable example being the Red River Gorge within the Daniel Boone National Forest, which has become popular for its climbing opportunities (Maples & Bradley, 2021). Maples & Bradley (2021) estimate that climbers spend \$8.7 million annually in the surrounding area support over 100 jobs.

This shows evidence of the viability of outdoor recreation in Kentucky while also showing how it supports the local community. This provides a great foundation to showcase how avitourism could serve a similar function in the state, as and Biggs et al. (2011) discuss the potential that avitourism has to develop local communities. As Tourism Economics (2022) found, the lodging industry sees some of the most income from tourism in the state, which corroborates what Jones & Buckley (2001) acknowledged about avitourism.

As it stands, avitourism could prove an interesting role in filling the gap left by extractive industries like coal. The state has already seen other outdoor recreation activities (like climbing) bring benefits to communities. The use of a flagship species could prove to be an effective way in attracting avitourists to the area and establishing the framework for a larger birding community.

Wealth and other socio-economic factors being a barrier to entry for avitourism are ones that could likely inhibit the activity becoming more popular in Kentucky. Especially considering economic growth and resilience has been stifled through a dependence on coal (Maples et al., 2019). The climbing community has found effective ways to through the use of inclusivity-focused groups (Maples et al., 2022). Creating a sense of community provides a support group for individuals looking to get involved in avitourism and as Randler & Marx (2022) found, social influence was the largest factor in determining how individuals initially gained interest in birding. So, it would seem establishing a strong community around avitourism would help grow the activity in Kentucky. This already exists to some degree, with an example being The American Birding Society planning to increase representation and remove barriers to entry by including no-cost memberships, scholarship programs, and portrayal in media (Gordon, 2020).

Crowd source features could provide great way to do this. One example would be Birdability, a nonprofit that seeks to make the birding community welcoming, inclusive, safe, and accessible (Birdability, n.d.). Birdability features a crowdsourced map that lets users describe accessibility features of birding locations (“Contribute to the Birdability Map”, n.d.). Features like this are great

for fostering and encouraging community efforts. This is perhaps even more true with avitourism, which has an aging community established (Nicolaidis, 2013).

As Kentucky does not already have an established avitourism sector, avoiding the negative impacts that the region could face could possibly be mitigated through awareness of what has been identified in the literature. These aspects can be ecological and socio-economic in nature.

By understanding the relationship between recreation and conservation, land managers and avitourists can reduce the impact they have on the birds and their habitat. Hvenegaard & Dearden (1998a), mention how avitourists are highly conscious of how they interact with the environment, perhaps suggesting that this is an issue that is not prevalent with proper monitoring. It is worth noting that while individuals may now how they are affecting habitat, it is important that land managers are aware of how avitourists are affecting the land.

How avitourists affect the local human communities is perhaps better understood than how they affect the environment (Lopez et al., 2022). While the idea of locals being driven away by ecotourists seems less likely than in other parts of the world, they can still heavily impact the area. As previously mentioned, even though avitourists may bring wealth to an area, this does not mean that economic benefits are necessarily going to the people who live there (Sekercioglu, 2002; Biggs et al., 2011). If locals are unwilling or unable to adapt to the jobs that avitourism brings, the jobs will likely be outsourced. Further, there is nothing stopping outside entities from capitalizing on the tourism instead of the locals. Perhaps it is up to community leaders to regulate how this would come to fruition. As discussed with inclusivity in avitourism, community and collaboration may be key to seeing avitourism take hold in Kentucky.

In an area like Kentucky, which has already faced consequences by relying too heavily on one sector economically (Maples et al., 2019; Schumann, 2016), it is important that avitourism (or tourism in general) does not follow a similar trend as coal. It should be one aspect of a larger sector that benefits Kentucky (Fritsch & Johannsen, 2004). Further, as Brophy (2015) mentions, tourism is energy intensive. With coal no longer as prevalent in the state, a larger tourism industry could cause problems. Despite this, many of the issues that avitourism can cause have been documented in the literature and with proper care and regulation, should be maintainable in Kentucky.



### References

- Allin, L. (2004). Climbing Mount Everest: Women, career and family in outdoor education. *Journal of Outdoor and Environmental Education*, 8, 64–71.
- Beeton, S. (1998). *Ecotourism: A practical guide for rural communities*. Landlinks Press.
- Birdability. (n.d.). *Contribute to the birdability map*. Available at <https://www.birdability.org/>
- Biggs, D., Turpie, J., Fabricius, C., & Spenceley, A. (2011). The value of Avitourism for conservation and job creation-an analysis from South Africa. *Conservation and Society*, 9(1), 80. <https://doi.org/10.4103/0972-4923.79198>
- Boyle, S. A., & Samson, F. B. (1985). Effects of nonconsumptive recreation on wildlife: a review. *Wildlife Society Bulletin*, 13, 110–116.
- Brophy, S. C. (2015). *Ecotourism: Practices, benefits and environmental impacts*. Nova Science Publishers Incorporated.
- Burger, J., Gochfeld, M., & Niles, L. J. (1995). Ecotourism and birds in coastal New Jersey: Contrasting responses of birds, tourists, and managers. *Environmental Conservation*, 22(1), 56–65. <https://doi.org/10.1017/s0376892900034081>
- Chen, L. & Chen, W. (2015). Push–pull factors in international birders’ travel. *Tourism Management*, 48, 416–425.
- Cobar, A.G.C., Borromeo, M.C.B., Agcaoili, J.K.M. & Rodil, A.M.T. (2017). Acute effect of birdwatching on mood states of senior high school students in the physical education setting. *Ovidius University Annals, Series Physical Education & Sport/Science, Movement & Health*, 17(1), 18–25.
- Cordell, H. K., & Herbert, N. G. (2002). The popularity of birding is still growing. *Birding*, 34, 54–59.
- Elliott, M. (1991). The Pleasure Principle, *The Economist, Travel and Tourism Report*. 3-22.
- Eubanks, T., & Stoll, J. R. (1999). *Avitourism in Texas - Two Studies of Birders in Texas and their Potential support for the Proposed World Birding Center*. [https://www.researchgate.net/profile/John-Stoll/publication/268287825\\_Avitourism\\_in\\_Texas\\_Avitourism\\_in\\_Texas/links/567498cf08ae125516e0a298/Avitourism-in-Texas-Avitourism-in-Texas.pdf](https://www.researchgate.net/profile/John-Stoll/publication/268287825_Avitourism_in_Texas_Avitourism_in_Texas/links/567498cf08ae125516e0a298/Avitourism-in-Texas-Avitourism-in-Texas.pdf)
- Fritsch, A. J., & Johannsen, K. (2004). *Ecotourism in Appalachia: Marketing the mountains*. The University Press of Kentucky.
- Fennell, D. A. (2003). *Ecotourism: An introduction* (2nd ed). Routledge.
- Gordon, J. A. (2020, July 6). The ABA and equity, diversity, and inclusion. *American Birding Association*. <https://www.aba.org/the-aba-and-equity-diversity-and-inclusion/>
- Harrison, D. L., Scruggs, C. J., Hendrick, M. L., Caraway, J. K., Morales, B., Jones, J. M., Kane, B. J., Perkins, I. M., & Zajchowski, C. A. B. (2022). Contemporary issues, opportunities, and resources for the U.S. Outdoor Recreation Profession. *Journal of Outdoor Recreation and Tourism*, 39, 100560. <https://doi.org/10.1016/j.jort.2022.100560>
- HaySmith, L. & Hunt, J.D. (1995) Nature tourism: impacts and management. In R.L. Knight & K.J. Gutzwiller (Eds.). *Wildlife and Recreationists: Coexistence Through Management and Research*, ed. (pp. 203–219). Island Press.
- Hicks, A. S., Mirza, S., Rice, W. L., Richards, J. C., & Alarab, M. R. (2020). When green is blue: Perspectives on inclusivity and recommendations towards reforming and demilitarizing law

- enforcement in US national parks. *Parks Stewardship Forum*, 36(3). <https://doi.org/10.5070/p536349863>
- Honey, M. (2008). *Ecotourism and sustainable development who owns paradise?* Island Press.
- Hvenegaard, G. T., & Dearden, P. (1998a). Ecotourism versus tourism in a Thai national park. *Annals of Tourism Research*, 25(3), 700–720. [https://doi.org/10.1016/s0160-7383\(98\)00020-6](https://doi.org/10.1016/s0160-7383(98)00020-6)
- Hvenegaard, G. T., & Dearden, P. (1998b). Linking ecotourism and biodiversity conservation: A case study of Doi Inthanon National Park, Thailand. *Singapore Journal of Tropical Geography*, 19(2), 193–211. <https://doi.org/10.1111/1467-9493.00034>
- Istomina, E.A., Luzhkova, N.M. & Khidekel, V.V. (2016). Birdwatching tourism infrastructure planning in the Ria Formosa Natural Park (Portugal). *Geography and Natural Resources*, 37(4), 371–378.
- Jones, D. N., & Buckley, R. (2001). *Birdwatching tourism in Australia*. CRC for Sustainable Tourism.
- Lawton, L. J. (2009). Birding festivals, sustainability, and ecotourism. *Journal of Travel Research*, 48(2), 259–267. <https://doi.org/10.1177/0047287509332330>
- Lerner, S. (2012). *Sacrifice zones: The front lines of toxic chemical exposure in the United States*. MIT Press.
- Lewin, P. G. (2017). “Coal is not just a job, it’s a way of life”: The cultural politics of coal production in Central Appalachia. *Social Problems*, 66(1), 51–68. <https://doi.org/10.1093/socpro/spx030>
- López, L., Balanta, V. J., & Vargas, H. F. (2022). Research trends in socio-environmental and sociocultural aspects of ecotourism in Latin America (2015-2020). *Praxis & Saber*, 13(34). <https://doi.org/10.19053/22160159.v13.n34.2022.12790>
- Manning, R. E. (2011). *Studies in outdoor recreation: Search and research for satisfaction*. Oregon State Univ Press.
- Maples, J., & Bradley, M. (2021). Outdoor Recreation and rural transitions in Central Appalachia: Revisiting the economic impact of rock climbing in Kentucky’s Red River Gorge. *Journal of Economic Impact*, 3(3), 186-195.
- Maples, J. N., Bradley, M. J., Clark, B., Giles, S., & Leebrick, R. (2022). Leave no person behind: Exploring how demographic categories shape LNT principles among climbers in West Virginia's New River Gorge. *Journal of Outdoor and Environmental Education*, 25(2), 219–245. <https://doi.org/10.1007/s42322-022-00106-0>
- Gorge. *Journal of Economic Impact*, 3(3), 186–195. <https://doi.org/10.52223/jei3032108>
- Maples, J., Bradley, M., Giles, S., Leebrick, R., & Clark, B. (2019). Climbing out of coal country: The economic impact of rock climbing in West Virginia’s New River Gorge. *Journal of Appalachian Studies*, 25(2), 184–201. <https://doi.org/10.5406/jappastud.25.2.0184>
- Measells, M. & Grado, S. (2007). *Economic Impacts of Two Birding Festivals in Mississippi*, Publication No. F0341, Forest and Wildlife Research Center. Starkville: Mississippi State University.
- Mehmetoglu, M. (2007). Nature-based tourists: The relationship between their trip expenditures and activities. *Journal of Sustainable Tourism*, 15(2), 200–215. <https://doi.org/10.2167/jost642.0>

- National Park Service. (2005). *The health and social benefits of recreation*. [https://www.nps.gov/goga/learn/management/upload/1536\\_ca-health\\_benefits\\_081505-2.pdf](https://www.nps.gov/goga/learn/management/upload/1536_ca-health_benefits_081505-2.pdf)
- Nicolaides, A. (2013). Promoting Avitourism as a special niche area of Ecotourism in South Africa. *African Journal of Hospitality, Tourism and Leisure*, 2(3).
- Primack, R. B. (2012). *A Primer of Conservation Biology*. Sinauer Associates, Inc. Publishers.
- Randler, C., & Marx, N. (2022). Initial involvement into birding: Triggers, gender, and decade effects—a mixed-methods study. *Humanities and Social Sciences Communications*, 9(1). <https://doi.org/10.1057/s41599-022-01062-2>
- Schumann, W. (2016). Sustainable development in Appalachia: Two Views. *Journal of Appalachian Studies*, 22(1), 19–30. <https://doi.org/10.5406/jappastud.22.1.0019>
- Sekercioglu, C. H. (2002). Impacts of birdwatching on human and avian communities. *Environmental Conservation*, 29(3), 282–289. <https://doi.org/10.1017/s0376892902000206>
- Sekercioglu, C. H. (2003) Conservation through commodification. *Birding* 35, 394-402.
- Steven, R., Morrison, C., & Castley, J. G. (2014). Birdwatching and avitourism: A global review of research into its participant markets, distribution and impacts, highlighting future research priorities to inform Sustainable Avitourism Management. *Journal of Sustainable Tourism*, 23(8-9), 1257–1276. <https://doi.org/10.1080/09669582.2014.924955>
- Steven, R., Castley, J. G., & Buckley, R. (2013). Tourism revenue as a conservation tool for threatened birds in Protected Areas. *PLoS ONE*, 8(5). <https://doi.org/10.1371/journal.pone.0062598>
- Swanson, D. A. (2018). *Beyond the mountains commodifying Appalachian environments*. The University of Georgia Press.
- Tershy, B. R., Breese, D., & Croll, D. A. (1997). Human perturbations and conservation strategies for San Pedro Mártir Island, islas del golfo de California reserve, México. *Environmental Conservation*, 24(3), 261–270. <https://doi.org/10.1017/s0376892997000349>
- Thomas, S. L., & Reed, S. E. (2019). Entrenched ties between outdoor recreation and conservation pose challenges for Sustainable Land Management. *Environmental Research Letters*, 14(11), 115009. <https://doi.org/10.1088/1748-9326/ab4f52>
- Tourism Economics. (2022, June). Economic Impact of Visitors in Kentucky 2021. <https://www.kentuckytourism.com/sites/default/files/2022-08/Kentucky%20Tourism%20Economic%20Impact%20-%202021%20-%20CLIENT.pdf>
- United States Fish & Wildlife Service (2019, September 1) *Addendum to the 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation; Report 2016-2*
- Vaske, J. J. & Lyon, K.M. (2014). Linking the 2010 Census to National Park visitors. *Natural Resource Technical Report NPS/WASO/NRTR2014/880*. <https://irma.nps.gov/Datastore/DownloadFile/495294>.
- Vazzana, C. M., & Rudi-Poloshka, J. (2019). Appalachia has got talent, but why does it flow away? A study on the determinants of brain drain from Rural USA. *Economic Development Quarterly*, 33(3), 220–233. <https://doi.org/10.1177/0891242419844320>

**(Peer-Reviewed Article)****Programmatic Accreditation in Sport Management and the Absence of Perceived Quality**

*Chris Corr, Troy University*

*Sarah Stokowski, Clemson University*

**Abstract**

Accreditation is a primary metric in determining academic quality. While institutional accreditation is federally mandated, programmatic accreditation is pursued at the discretion of an individual college, school, or department. The Commission on Sport Management Accreditation (COSMA) is the sole programmatic accreditor within the field of sport management higher education in the United States. Although there are over 400 sport management degree programs in the United States, less than 10% ( $n = 33$ ) currently hold programmatic accreditation through COSMA. Given that programmatic accreditation exists to promote quality assurance within a unique academic discipline, the depreciation of programmatic accreditation in sport management is concerning. Furthermore, as accreditation is a determinant of *perceived value* among students and parents of students, the disregard for programmatic accreditation in sport management has a direct outcome on the perceptual value of a degree in sport management. This manuscript outlines the functional value of programmatic accreditation and examines the adverse effects of indifference to programmatic accreditation in the field of sport management. Suggestions are provided to foster and promote the value of programmatic accreditation within the field of sport management in the future.

*Keywords: accreditation, programmatic accreditation, sport management, COSMA*

**Introduction**

Elements of sport management have been around for centuries (Hall, 2003; Seifried, 2017; Stokowski et al., 2018); however, sport management academia within the confines of higher education is a relatively recent phenomenon (Gillentine, 2012; Masteralexis et al., 2012; Parks et al., 2011; Stokowski et al., 2018). Although sport management has been defined as “the study and practice of all people, activities, business, or organizations involved in producing, facilitating, promoting or organizing any sport-related business or product” (Pitt & Stotler, 2007, p. 4), there continues to be a debate into the legitimacy of sport management as an academic discipline. Much of this debate revolves around the interdisciplinary nature of sport and the transferability of sport to a multitude of spaces (Chalip, 2006; Danylchuk & Boucher, 2003; Jones et al., 2008; Schwab et al., 2013; Stokowski et al., 2022; Zahara et al., 2016).

In part due to the pervasiveness of sport within global society, sport management degree programs have grown exponentially and are often viewed by college administrators as a mechanism to

bolster student enrollment (Hancock & Greenwell, 2013). In nearly two decades the prominence of sport management programs at institutions of higher learning has increased 160% (Jones et al., 2008; North American Society of Sport Management [NASSM], 2018). Accordingly, more than 500 sport management programs can be found worldwide (Degrees in Sports, n.d.), with 430 programs residing in the United States at the undergraduate and graduate classification (NASSM, 2018).

Despite its popularity, the academic discipline of sport management lacks unity. The stratification of sport management programs housed within various disciplines (e.g., business, education, kinesiology) has made standardization exceedingly difficult. While sport management programs are primarily housed in business and education (i.e., applied sciences), sport management can be found in various other academic disciplines as well (Chalip, 2006; Danylchuk & Boucher, 2003; Fielding et al., 1991; Jones et al., 2008; Mahony, 2008; Stokowski et al., 2022; Zaharia et al., 2016). This stratification of sport management programs across an array of educational settings creates complications and limits opportunities for standardization.

Although the need to unify the sport management discipline through programmatic accreditation was codified in 1993 by the National Association for Sport and Physical Education-NASSM Joint Task Force on Sport Management Curriculum and Accreditation, the perceived value of programmatic accreditation in sport management remains glaringly apparent as evidenced by only 33 sport management programs currently holding sport management specific programmatic accreditation (Commission on Sport Management Accreditation [COSMA], n.d.a.). While the significance and value of programmatic accreditation is well founded (COSMA, n.d.a; Council for Higher Education Accreditation [CHEA], n.d.; United States Department of Education [USDOE], 2019), the absence of perceived value in accreditation for sport management programs continues to foster discontinuity, and thus, illegitimacy within the field. Accordingly, the purpose of this paper is to explore the perceptual value of programmatic accreditation in sport management and identify potential opportunities within higher education to promote the value of accreditation among sport management programs.

### **Accreditation of Academic Disciplines and Sport Management**

In an effort to attend to societal needs and ensure public health and safety, an external review process was established to determine educational quality (Eaton, 2015; USDOE, 2019). *Accreditation* serves as “the primary means by which colleges, universities and programs assure quality to students and the public” (Eaton, 2015, p. 2). To this, the function of accreditation is to assure quality, accessibility to governmental financial allocation(s), confidence from those who reside in the private sector, and assist in the ease of transfer (Eaton, 2015). Assuring quality provides students and stakeholders with educational validity, allowing accreditation to serve as a “status” by ensuring certain “thresholds” are met (Eaton, 2015, p. 2). Institutional accreditation through an approved accrediting agency provides students with the ability to seek governmental financial assistance (Eaton, 2015; USDOE, 2019). Private sector confidence ensures “an institution or program is important to employers when evaluating credentials of job applicants and when deciding whether to provide tuition support for current employees seeking additional education”

(Eaton, 2015, p. 3). Lastly, an indication of quality is that of easing transfer, which assists students in transferring courses and credits (Eaton, 2015).

There are four categories (regional, national faith-related, national career-related, and programmatic) of accreditation organizations in the United States (US; Eaton, 2015; USDOE, 2019). Regional accreditors “accredit public and private, mainly nonprofit and degree-granting, two- and four-year institutions” (Eaton, 2015, p. 2). National faith-related accreditors “accredit religiously affiliated and doctrinally based institutions, mainly nonprofit and degree-granting” (Eaton, 2015, p. 2). National career-related accreditors “accredit mainly for-profit, career-based, single-prepose institutions, both degree and non-degree” (Eaton, 2015, p. 2). Programmatic accreditors “accredit specific programs, professions and freestanding schools, e.g., law, medicine, engineering and health professions” (Eaton, 2015, p. 2).

### **COSMA: Its accreditation process and accredited programs**

The Commission on Sport Management Accreditation (COSMA) is currently the only accrediting body specifically serving the academic discipline of sport management. Whereas accrediting bodies within traditional academic disciplines (e.g., Association to Advance Collegiate Schools of Business [AACSB]) offer accreditation standards that encompass the entirety of degree programs offered within an individual school or college (i.e., *institutional accreditation*), COSMA solely accredits sport management degree programs. This specific accreditation of an individual degree program (i.e., sport management) is referred to as *specialized accreditation* – or *programmatic accreditation* – and is an expressed benefit of specialized accrediting bodies such as COSMA (COSMA, n.d.a; CHEA, n.d.; USDOE, 2019).

Specialized accreditation is of specific value to degree programs that exist within unique educational and professional fields. As sport management is typically associated with *the business of sport* (Stokowski et al., 2022), curriculum is uniquely situated to integrate various components of traditional business degree programs (e.g., finance, law, marketing). Whereas institutional accreditation is an indicator of the quality of a breadth of degree offerings, specialized accreditation is an indicator of the quality of an individual degree program as determined by content area experts within the specialized field (USDOE, 2019; Vibert, 2017). Specifically serving sport management degree programs, COSMA’s Board of Directors (BOD) and Board of Commissioners (BOC) (i.e., content area experts) are composed of various stakeholders (e.g., academicians, professionals, students) in the field of sport management (COSMA, n.d.b, n.d.c). Seemingly, the COSMA BOD and BOC are composed of faculty members at COSMA accredited institutions, or institutions of similar size and composition to COSMA accredited institutions.

### ***COSMA Accredited Programs***

Currently, 54 institutions are COSMA accredited ( $n = 54$ ) or seeking COSMA accreditation (i.e., *program members* or in *candidacy status*). While nearly every COSMA institution offers a bachelor’s degree program in sport management, sport administration, or sport leadership ( $n = 52$ , 96%), only half ( $n = 27$ ) of COSMA institutions offer an advanced degree (i.e., graduate degree)

in sport management. Even fewer ( $n = 6$ , 11%) offer a terminal (i.e., doctoral) degree in sport management. As The Carnegie Classification of Institutions of Higher Education (CCIHE) factors doctoral serving institutions in determining basic classifications, it is unsurprising that five of the six COSMA institutions offering a terminal degree in sport management are classified as *Very High Research Activity*, or R1, institutions (The Carnegie Classification of Institutions of Higher Education [CCIHE], n.d.). Twenty-one (39%) of COSMA institutions are classified as doctoral serving institutions and therefore receive a R1, R2, or R3 classification (e.g., *Very High Research Activity*, *High Research Activity*). The remaining 33 COSMA institutions (61%) are classified as *Master's College & Universities* or *Baccalaureate Colleges* (CCIHE, n.d.). A complete list of COSMA institutional information can be found in Table 1.

*Table 1. Characteristics of COSMA Institutions*

CCIHE Classification	N	Public Designation	Private Designation	Enrollment	Sectarian	Non-Sectarian
Doctoral Universities: Very High Research Activity	9	8	1	29,293	0	9
Doctoral Universities: High Research Activity	5	5	0	16,097	0	5
Doctoral/Professional Universities	7	2	5	18,435	2	5
Master's College & Universities: Larger Programs	19	13	6	11,245	1	18
Master's College & Universities: Medium Programs	1	0	1	1,518	0	1
Master's Colleges & Universities: Small Programs	6	0	6	2,287	5	1
Baccalaureate Colleges: Diverse Fields	7	3	4	2,906	2	5
Total/Average	54	31	23	13,378	10	44

Previous literature has cited the variation in colleges housing sport management degree programs as an indication of the disorganization of the field of sport management, specifically in the United States (Jones et al., 2008; Mahony, 2008; Stokowski et al., 2022). Similarly, COSMA institutions are stratified across a variety of subfields. As of publication, 23 (43%) COSMA institutions are housed in a college or school of business, 15 (28%) in health sciences (e.g., health promotions, physical education), 11 (20%) in education, four (7%) in kinesiology, and one in communications (2%). While the majority of COSMA institutions house sport management programs in a college

or school of business, COSMA institutions with a CCIHE designation of R1, R2, or R3 were more likely to house sport management programs in education ( $n = 8$ , 42%) or health sciences ( $n = 6$ , 32%) than business ( $n = 5$ , 26%). A complete list of disciplines housing sport management programs at COSMA institutions can be found in Table 2.

*Table 2. College/School Housing Sport Management at COSMA Institutions*

CCIHE Classification	Business	Communication	Education	Health Science	Kinesiology
Doctoral Universities: Very High Research Activity	2	0	5	2	0
Doctoral Universities: High Research Activity	0	0	3	2	0
Doctoral/Professional Universities	3	1	1	2	0
Master's College & Universities: Larger Programs	7	0	2	7	3
Master's College & Universities: Medium Programs	1	0	0	0	0
Master's Colleges & Universities: Small Programs	5	0	0	1	0
Baccalaureate Colleges: Diverse Fields	5	0	0	1	1
Total	23	1	11	15	4
% of COSMA Institutions	43%	2%	20%	28%	7%

### **Program Rankings in the U.S. News & World Report**

For 34 years, U.S. News & World Report (USNWR) has published college rankings of academic prestige, based on quantitative instruments measuring the *reputation* of institutions of higher learning (USNWR, n.d.). USNWR ranks undergraduate institutions in the specific academic fields of business, computer science, engineering, and nursing. Within the field of business, USNWR recognizes and ranks 13 individual degree programs; accounting, analytics, entrepreneurship, finance, insurance, international business, management, management information systems, marketing, production/operation management, quantitative analysis, real estate, and supply chain management/logistics (USNWR, n.d.). Notably, sport management is not recognized or ranked by USNWR. For a business degree program to be ranked by USNWR the college or school of business in which they are housed must be AACSB accredited. Similarly, computer science and engineering programs must be accredited by Accreditation Board for Engineering and Technology (ABET) to



be ranked by USNWR while nursing programs must be accredited by either the Commission on Collegiate Nursing Education (CCNE) or Accreditation Commission for Education in Nursing (ACEN). Given that colleges or schools often seek discipline specific accreditation (e.g., AACSB, ABET) to be ranked by USNWR, programmatic or specialized accreditation in sport management may lack perceived value among the over 500 sport management programs in the United States in part due a lack of formalized classification (i.e., rankings).

### Discussion

Parent and student perspectives are often influenced by institutional and program rankings (Brooks, 2005; Kim & Shim, 2019). Leveraging this perception, institutions strategically shift priorities and alter allocations in an effort to ensure favorable rankings and classification (Kim, 2018; Sauder & Fine, 2008). Despite the questionable measures used to rank institutions and programs (e.g., Clarke, 2007; Porter, 2000), a favorable ranking in outlets like USNWR has become an aspiration for institutions of higher learning in the United States (Hazelkorn, 2011; Kim & Shim, 2019).

Such emphasis placed on USNWR rankings is exemplified by the University of Florida's 2014 presidential search, in which the objective was to hire a candidate with a primary background and focus in academia (Mitchell, 2014). Accordingly, the university tabbed Cornell University Provost Dr. Kent Fuchs as the 12th President of the University of Florida. At the time of Dr. Fuch's hiring, the University of Florida was ranked 14th on the annual USNWR *Best Colleges* rankings in the *public universities* designation. Fuchs openly expressed that a top-ten ranking was a goal before he stepped foot on campus (Turner, 2014). Six years into Fuch's tenure, when the annual USNWR *Best Colleges* rankings were released in 2021, the University of Florida was ranked fifth among the *public universities* designation (University of Florida, 2021). Across campus, university stakeholders celebrated the ranking while the University bookstore sold *Top Five* banners to eager students and alumni (Tritto, 2022). Given the increasing academic profile of the university, undergraduate applications to the university rose by 6.3% in 2021 and 14% in 2022, a two-year increase of over 20% (Liebowitz, 2022; Lugo, 2021). The prestigious perception of the University of Florida following the top five USNWR ranking has driven applications and exemplifies the strategic emphasis that higher education administration places on improving the USNWR ranking of their respective college or university.

In addition to institutional rankings, USNWR ranks individual colleges housed within institutions of higher education. Similarly to institutional rankings, administrative officials place an inherent emphasis on the USNWR ranking of academic disciplines offered at their respective institutions. While the calculation of the USNWR rankings are debated among higher education administrators, there is a well-founded acceptance of the necessity of rankings with regards to student applicants' - and parents of student applicants - perceptions of academic prestige (Saul, 2022). Accordingly, the value of USNWR rankings is the *perceived value* of the ranking, specifically in comparison with an institution's primary competitors (e.g., fellow in state institutions).

While institutional accreditation is federally mandated, programmatic accreditation is left to the discretion of individual academic disciplines. Similarly to the USNWR rankings, programmatic accreditation such as COSMA accreditation is postulated to be an *indicator* of quality (Sports Management Degree Guide, 2021), rather than an essential component to an effective degree offering. As the primary arbiter of perceived *quality* among higher education institutions and academic disciplines, USNWR's lack of recognition of sport management as a *ranked* degree program and, accordingly, the lack of requirement of COSMA accreditation for sport management degree programs, serves as a direct influential factor in the perception of the *value* of COSMA accreditation among established sport management degree programs. Given the stratification of colleges housing sport management as an academic discipline (Jones et al., 2008; Mahony, 2008; Stokowski et al., 2022), a USNWR categorical ranking of sport management degree programs is problematic. While encompassing a multitudinous number of academic disciplines (e.g., business, education, kinesiology), the stratified nature of sport management as an academic discipline directly affects the value of programmatic accreditation in sport management.

Given the emphasis COSMA places on common professional components (CPCs) that mandate functional and industry oriented professional competencies (COSMA, 2022, Principle 3.2), programmatic accreditation in COSMA directly situates the academic discipline of sport management within the context of applied sciences. While all of the current COSMA accredited institutions are housed within a college classifying within the traditional definition of applied sciences, the stratification across the field is apparent. The standardization in the classification of an academic discipline such as *accounting* within a college of business lends itself to the value of AACSB accreditation as USNWR only ranks accounting programs that are housed within AACSB accredited business schools. Accordingly, the value of COSMA accreditation among institutions offering established sport management programs is inherently limited given the perceived lack of value and minimal return on investment (Grube & Grappendorf, 2022; Noorda, 2011; Stokowski et al., 2022; Zaharia et al., 2016).

As in 1993 with the formation of the National Association for Sport and Physical Education-NASSM Joint Task Force on Sport Management Curriculum and Accreditation, the field of sport management still faces similar difficulties related to legitimacy and standardization. The stratification of sport management inter-classification (e.g., business, education, kinesiology) limits the growth of the academic discipline while impeding the viability of programmatic accreditors such as COSMA.

It is important to note that sport management does not fall in line with the basic functions of accreditation (i.e., assuring equality, access to governmental aid, private sector confidence, aiding in transfer) (Eaton, 2015; USDOE, 2019). Given that programmatic accreditation exists as a means of quality assurance within a unique degree offering, it is concerning that less than 10% of sport management programs in the United States currently hold sport management specific programmatic accreditation. While collectively the field of sport management education depreciates the value of programmatic accreditation in sport management (i.e., COSMA), sport management as an academic discipline is keenly aware of the importance of private sector confidence, evident by the concerted emphasis placed on student experiential learning

opportunities integral to employment upon graduation (e.g., Cohen & Nite, 2019; McLean et al., 2019; Sauder & Mudrick, 2018). Considering that the private sector permits students from unaccredited sport management programs to take part in practical learning experiences, it can be inferred that programmatic accreditation in sport management is not of significance to stakeholders in the private sector. As the professional field of sport management places inordinate emphasis on networking with regards to job attainment (Hadani et al., 2012), the influence of an accredited sport management degree is further devalued. In addition, a lack of curriculum standardization has manifested in a variety of unique *elective* course offerings that differ institutionally. While conceptually valuable, elective course offerings are problematic in the context of accreditation's direct function to aid in student transfer. In order for sport management programs to find perceived value in accreditation there must be merit to obtaining accreditation.

### Conclusion & Future Research

The expressed purpose of this manuscript is not to diminish the value of programmatic accreditation in sport management. As noted, there is immense value in programmatic accreditation and, ideally, accreditation serves as a means to measure *academic quality* and *assurance*. However, due to a multitude of variables (e.g., interdisciplinary nature of sport management) there is a notable absence in the *perceived value* of programmatic accreditation in sport management.

Research has illustrated that students' perceived value of accreditation is contingent on if their program is accredited. Accordingly, students enrolled in accredited programs find value in accreditation while students enrolled in unaccredited programs do not see value in accreditation (Wilcoxon et al., 1987). As most doctoral granting institutions are not COSMA accredited (see Table 1) and it is these institutions that are the primary producers of future sport management faculty members, there is an innate lack of perceived value among future leaders in the discipline. Through pedagogical training regarding outcomes assessment and curriculum development, doctoral sport management students need to be made aware of the value of programmatic accreditation, such as COSMA. The presence and support of programmatic accreditation in sport management within professional development settings (e.g., NASSM) would be beneficial in fostering the perceived value of accreditation among stakeholders (i.e., academicians) in the field of sport management. In addition, programmatic accreditors should consider providing accessible development opportunities to doctoral students to cultivate the perceived value of accreditation. It should be noted that COSMA waives all costs related to doctoral student registration at the annual COSMA Conference in an attempt to cultivate this development.

As USNWR only ranks programs with discipline specific accreditation (e.g., AACSB, ABET), the perceived value of accreditation is inherently linked to USNWR rankings. Accordingly, programmatic accreditation in sport management is devalued, in part, due to lack of classification in USNWR rankings. Such classification would motivate sport management programs, and respective administrators, to seek programmatic accreditation in sport management. However, given the stratification of the field of sport management across numerous academic disciplines (i.e., business, education, kinesiology), partnership with more ubiquitous accreditors (e.g.,

AACSB) as *supplementary specialized accreditation* may be advantageous to programmatic accreditors in sport management (i.e., COSMA) in establishing a USNWR sport management ranking classification. Future research examining existent sport management program rankings and the causal effects of such rankings on students' decision to enroll at a given institution would be valuable in illustrating the value of USNWR rankings with regards to sport management students' enrollment decisions.

In addition, an analysis of the curricular content of sport management programs in the United States would be valuable in determining the academic discipline most akin to sport management. As Eagleman & McNary (2010) identified, significant differences exist in sport management curriculum dependent on the greater discipline (e.g., business, education, kinesiology) the program is housed. Given the stratification in the field, standardized accreditation in sport management is inherently difficult. An understanding of the isomorphic components across sport management would provide justification for the standardization of sport management within a specific academic discipline. Whether these similar and related components center sport management as a sub-field of business, education, or any other area typically home to sport management, standardization across the discipline would be valuable in establishing credibility. Sport management as an academic discipline needs this consistency, especially moving into an era where the perceptual value of a college education is changing.

The necessity of unification within the academic field of sport management was established in 1993 by the National Association for Sport and Physical Education-NASSM Joint Task Force on Sport Management Curriculum and Accreditation. In the nearly three subsequent decades, sport management scholars have called for uniformity within the field to demonstrate legitimacy (Chalop, 2006; Fielding et al., 2001; Gillentine, 2012; Jones et al., 2008; Mahony, 2008; Stokowski et al., 2008; Zaharia et al., 2016). Programmatic accreditation is fundamentally designed to foster standardization and promote quality assurance, a measure of legitimacy. As such, programmatic accreditation in sport management can be of particular value to individual programs and the greater field of sport management. As the sole accrediting body in sport management, COSMA occupies a unique position as an advocate for sport management unification. Such advocacy should not only demonstrate the *need* for accreditation but also the need for functional partnerships. As the current primary modality for unification in the field of sport management, NASSM holds an influential position relative the perceived value of programmatic accreditation in sport management. A joint advocacy initiative between COSMA and NASSM could serve to cultivate an increased awareness and perception of programmatic accreditation. Such efforts could stimulate partnerships between the two organizations that create alignment within the greater field of sport management. Such alignment is integral to the continued growth and success of the academic field of sport management.

## References

- Brooks, R. (2005). Measuring university quality. *The Review of Higher Education*, 29(1), 1–21. <https://doi.org/10.1353/rhe.2005.0061>
- Carnegie Classification of Institutions of Higher Education (CCIHE). (n.d.). Standard listings. *The Carnegie Classification of Institutions of Higher Education*. [https://carnegieclassifications.acenet.edu/lookup/standard.php#standard\\_basic2005\\_list](https://carnegieclassifications.acenet.edu/lookup/standard.php#standard_basic2005_list)
- Clarke, M. (2007). The impact of higher education rankings on student access, choice, and opportunity. *Higher Education in Europe*, 32(1), 59–70. <https://doi.org/10.1080/03797720701618880>
- Cohen, A., & Nite, C. (2019). Assessing experiential learning with a critical lens. *Sport Management Education Journal*, 13(1), 1-10. <https://doi.org/10.1123/smej.2018-0010>
- Commission on Sport Management Accreditation (COSMA). (n.d.a). What is specialized accreditation? *COSMA*. <https://www.cosmaweb.org/accreditation.html>
- Commission on Sport Management Accreditation (COSMA). (n.d.b). Board of directors. *COSMA*. <https://www.cosmaweb.org/board-of-directors.html>
- Commission on Sport Management Accreditation (COSMA). (n.d.c). Board of commissioners. *COSMA*. <https://www.cosmaweb.org/board-of-commissioners.html>
- Commission on Sport Management Accreditation. (2022). Accreditation principles manual & guidelines for self-study preparation. *COSMA*. [https://www.cosmaweb.org/uploads/2/4/9/4/24949946/accreditation\\_principles\\_march\\_022.pdf](https://www.cosmaweb.org/uploads/2/4/9/4/24949946/accreditation_principles_march_022.pdf)
- Council for Higher Education Accreditation (CHEA). (n.d.). Programmatic accrediting organizations. *CHEA*. <https://www.chea.org/programmatic-accrediting-organizations-accreditor-type>
- Chalip, L. (2006). Toward a distinctive sport management discipline. *Journal of Sport Management*, 20(1), 1–21. <https://doi.org/10.1123/jsm.20.1.1>
- Degrees in Sports. (n.d.). [Database of colleges and universities offering sports degrees]. <http://degreesinsports.com/sports-degrees-search.asp>
- Eagleman, A. N., & McNary, E. L. (2010). What are we teaching our students? A descriptive examination of the current status of undergraduate sport management curricula in the United States. *Sport Management Education Journal*, 4(1), 1-18.
- Eaton, J. S. (2015). *An overview of US accreditation*. Council for US Higher Education Accreditation.
- Fielding, L. W., Pitts, B. G., & Miller, L. K. (1991). Defining quality: Should educators in sport management programs be concerned about accreditation? *Journal of Sport Management*, 5(1), 1–17. <https://doi.org/10.1123/jsm.5.1.1>
- Gillentine, A. (2012). Moving mountains: Encouraging a paradigm shift in sport management. In A. Gillentine, R. E. Baker, & J. Cuneen, *Critical essays in sport management* (pp. 1–16). Holcomb Hathaway Publishing. <https://doi.org/10.4324/9781351217422-1>
- Grube, A. J., & Grappendorf, H. (2022). Accreditation and COSMA: The influence on curriculum design. In M. Rayner & T. Webb (Eds.), *Sport management education* (pp. 165-178). Routledge.

- Hadani, M., Coombes, S., Das, D., & Jalajas, D. (2012). Finding a good job: Academic network centrality and early occupational outcomes in management academia. *Journal of Organizational Behavior*, 33(5), 723-739. <https://doi.org/10.1002/job.788>
- Hall, C. (2003). *Job satisfaction of sport management faculty in the USA* (Doctoral dissertation, Florida State University).
- Hancock, M. G., & Greenwell, T. C. (2013). The selection of a sport management major: Factors influencing student choice from a consumer-oriented perspective. *Sport Management Education Journal*, 7(1), 24–35. <https://doi.org/10.1123/smej.7.1.13>
- Hazelkorn, E. (2011). *Rankings and the reshaping of higher education: The battle for world-class excellence*. Palgrave Macmillan.
- Jones, D. F., Brooks, D., & Mak, J. (2008). Examining sport management programs in the United States. *Sport Management Review*, 11(1), 77–91. [https://doi.org/10.1016/S1441-3523\(08\)70104-9](https://doi.org/10.1016/S1441-3523(08)70104-9)
- Kim, J. (2018). The functions and dysfunctions of college rankings: An analysis of institutional expenditure. *Research in Higher Education*, 59(1), 54–87. <https://doi.org/10.1007/s11162-017-9455-1>
- Kim, J., & Shim, W. J. (2019). What do rankings measure? The US News rankings and student experience at liberal arts colleges. *The Review of Higher Education*, 42(3), 933-964. <https://doi.org/10.1353/rhe.2019.0025>
- Liebowitz, C. (2022, January 10). UF and FSU applications are up. Why? What does this mean for students? *International College Counselors*. <https://internationalcollegecounselors.com/uf-and-fsu-applications-are-up-why-what-does-this-mean-for-students/>
- Lugo, A. (2021, March 1). UF welcomes more than 15,000 to the class of 2025. *The Independent Florida Alligator*. <https://www.alligator.org/article/2021/03/uf-admissions-2021>
- McClellan, C., Odio, M. A., & Kerwin, S. (2020). Exploring the influence of stimulus events: A case study of undergraduate student internships. *Sport Management Education Journal*, 14(1), 12-24. <https://doi.org/10.1123/smej.2018-0026>
- Mahony, D. F. (2008). No one can whistle a symphony: Working together for sport management's future. *Journal of Sport Management*, 22(1), 1–10. <https://doi.org/10.1123/jsm.22.1.1>
- Masteralexis, L., Barr, C., & Hums, M. (2012). *Principles and practice of sport management* (4th ed.). Jones & Bartlett Learning.
- Mitchell, T. (2014, October 15). University of Florida president selected: Cornell provost W. Kent Fuchs. *Tampa Bay Times*. <https://www.tampabay.com/news/education/college/finalists-to-make-their-last-pitch-in-university-of-florida-president/2202156/>
- National Association for Sport and Physical Education-North American Society for Sport Management Joint Task Force on Sport Management Curriculum and Accreditation. (1993). Standards for curriculum and voluntary accreditation of sport management education programs. *Journal of Sport Management*, 7(2), 159-170. <https://doi.org/10.1123/jsm.7.2.159>
- North American Society for Sport Management. (2018). Sport management programs: United States. *NASSM*.

- [https://web.archive.org/web/20180126073813/https://www.nassm.com/Programs/AcademicPrograms/United\\_States](https://web.archive.org/web/20180126073813/https://www.nassm.com/Programs/AcademicPrograms/United_States)
- Noorda, S. (2011). Future business schools. *Journal of Management Development*, 30(5), 519–525. <https://doi.org/10.1108/02621711111133028>
- Parks, J. B., Quarterman, J., & Thibault, L. (2011). Managing sport in the 21st century. In P. M. Pedersen, J. B. Parks, J. Quarterman, & L. Thibault (Eds.), *Contemporary sport management* (4th ed., pp. 5–27). Human Kinetics.
- Pitts, B. G., & Stotler, D. K. (2007). *Fundamentals of sport marketing* (3rd ed.). Fitness Information Technology.
- Porter, S. R. (2000). The robustness of the graduation rate performance indicator used in the U.S. News & World Report college rankings. *The Case International Journal of Educational Advancement*, 1(2), 145–164.
- Saul, S. (2022, September 15). Despite years of criticism, the U.S. News college rankings live on. *The New York Times*. <https://www.nytimes.com/2022/09/15/us/us-news-college-ranking.html>
- Sauder, M., & Fine, G. A. (2008). Arbiters, entrepreneurs, and the shaping of business school reputations. *Sociological Forum*, 23(4), 699–723. <https://doi.org/10.1111/j.1573-7861.2008.00091.x>
- Sauder, M. H., & Mudrick, M. (2018). Student satisfaction and perceived learning in sport management internships. *Sport Management Education Journal*, 12(1), 26–38. <https://doi.org/10.1123/smej.2016-0032>
- Schwab, K. A., Dustin, D., Legg, E., Timmerman, D., Wells, M. S., & Arthur-Banning, S. G. (2013). Choosing sport management as a college major. *SCHOLE: A Journal of Leisure Studies and Recreation Education*, 28(2), 16–27. <https://doi.org/10.1080/1937156X.2013.11949703>
- Schweers, J. (2014, September 9). UF improves in U.S. News rankings of universities. *Ocala StarBanner*. <https://www.ocala.com/story/news/2014/09/09/uf-improves-in-us-news-rankings-of-universities/31944637007/>
- Seifried, C. (2015). Tracing the history of sport management as a professional field and academic disciplines. In M. Bowers & M. Dixon (Eds.), *Sport management: An exploration of the field and its value* (pp. 16–36). Sagamore Publishing.
- Sports Management Degree Guide. (2021). Top 30 bachelor’s in sport management degree programs 2021. *Sports Management Degree Guide*. <https://www.sports-management-degrees.com/best-bachelors/>
- Stokowski, S., Li, B., Goss, B. D., Hutchens, S., & Turk, M. (2018). Work motivation and job satisfaction of sport management faculty members. *Sport Management Education Journal*, 12(2), 80–89. <https://doi.org/10.1123/smej.2017-0011>
- Stokowski, S., Paule-Koba, A. L., Huml, M. R., Koch, M. C., & Li, B. (2022). Sport management: Who we are and where we are going. *The Physical Educator*, 79, 84–103. <https://doi.org/10.18666/TPE-2022-V79-I1-10084>
- Tritto, E. (2022, September 23). UF pokes fun at students stealing Top 5 university banners. *Orlando Sentinel*. <https://www.orlandosentinel.com/news/education/os-ne-uf-stealing-top-5-university-banners-20220923-hrxhx5o27vcg5h2eh6mgb5lak4-story.html>

- Turner, J. (2014, November 7). Thrasher, Fuchs officially approved as presidents for FSU and UF. *Jacksonville Daily Record*. <https://www.jaxdailyrecord.com/article/thrasher-fuchs-officially-approved-presidents-fsu-and-uf>
- United States Department of Education (USDOE). (2019, December 10). Accreditation in the U.S. *U.S. Department of Education*. <https://www2.ed.gov/admins/finaid/accred/accredus.html>
- University of Florida. (2021, September 13). U.S. News & World Report ranks University of Florida fifth among top public universities in its 2022 best colleges rankings. *University of Florida News*. <https://news.ufl.edu/2021/09/usnwr-ranking-2022/>
- Vibert, J. (2017, June). The future of specialized and professional accreditation. *Council for Higher Education Accreditation*, 8, 1-2 <https://www.chea.org/future-specialized-and-professional-accreditation>
- Wilcoxon, S. A., Cecil, J. H., & Comas, R. E. (1987). Student perceptions of accreditation of programs in counseling. *Counselor Education and Supervision*, 27(2), 184–189. <https://doi.org/10.1002/j.1556-6978.1987.tb00757.x>
- Zaharia, N., Kaburakis, A., & Pierce, D. (2016). U.S. sport management programs in business schools: Trends and key issues. *Sport Management Education Journal*, 10(1), 13-28. <https://doi.org/10.1123/SMEJ.2015-0007>



**(Peer-Reviewed Article)****The Use of Strict Liability in Healthcare: Should Hospitals be Held Responsible?**

*Brittani Moberly, Eastern Kentucky University*

**Abstract**

This research reviews the concept of strict liability and its applicability in the healthcare system, specifically focusing on the application in hospitals. Strict liability has previously not been enforced in the healthcare setting. However, with changes in the market, it is time to reevaluate the necessity of strict liability, specifically in a hospital setting. Readers will find a complex review of literature on this topic and its current importance in today's healthcare market. Reviews of the application of strict liability regarding in-house software, organ transplants, and blood transfusions will be reviewed. Practical usage for practitioners will be evaluated, and potential mitigation processes will be addressed.

**The Use of Strict Liability in Healthcare**

Strict liability is a tort traditionally not applied to healthcare settings. Healthcare institutions of the past, specifically hospitals, have not been seen as manufacturers, sellers, or leasers of products to fall under the threshold of strict liability. Additionally, it was only a few decades ago that hospitals were still exempted under the doctrine of charitable immunity. However, with the evolution of healthcare, it is time to reevaluate the applicability of strict liability to hospitals. Hospitals can now be seen as manufacturers of products as many in-house pieces of technology are rapidly developing during this digital era. Additionally, with the continuous improvements in healthcare, higher-risk procedures are more frequently performed. With these advancements, it is important to analyze who needs to be held liable in strict liability tort cases. It is proposed that strict liability will be more frequently applied to healthcare institutions, specifically hospitals, as these trends in healthcare continue to grow.

**Overview**

The California government established the legal doctrine of strict liability in 1963 (Willis, 2007). Before the landmark case, the liability of wrongdoing was based on the defendant's fault of the product (*Greenman v. Yuba Power Products, Inc.*, 1963). The plaintiffs in cases had to prove the defendants were negligent. After establishing the doctrine, plaintiffs only had to prove they were injured by a defective product, regardless of the actions taken to prevent the defect. Therefore, strict liability is also known as liability without fault.

Some form of product liability law has been adopted in all 50 states. Thus, laws will differ between states, and the product liability laws of Kentucky can vary significantly from those in Florida. A

lack of governance at the federal level has led to many concerns with companies, as strict liability has caused many excess costs. Liability insurance has increased, and the cost of defending themselves in a lawsuit or paying out settlements is burdensome (Lawrance & Weber, 2020, pgs 317-318). Producers of goods are not selling in only one state. Therefore, these companies are increasing their risks of a product liability suit because each state law has differing regulations. With product liability laws being handled by the states, there needs to be some reform to address these. Potentially the federal government can develop a single product liability law that can be followed by all manufacturers, sellers, or leasers in the United States. Alternatively, the liability can be placed on the individual that is the closest link in the chain to the consumer. In the case of medical devices and product liability in healthcare, this would be the provider or healthcare organization.

Hospitals have historically been exempt from liability claims through charitable immunity (Bronik et al., 2017, pg. 106). This doctrine noted that since hospitals were philanthropic organizations, they could not or typically were not held liable for claims. However, healthcare is an ever-changing field that should be held to strict liability standards to increase the responsibility of healthcare providers. By having providers and hospitals responsible for the products and services they provide to patients, healthcare quality is likely to increase. Additionally, changes in healthcare include creating in-house technologies created by hospitals to reduce the cost of outsourcing. Hospitals need to be held responsible for these pieces of technology and how they impact the patients being treated. Therefore, this research will examine the applicability of strict product liability laws in hospitals in the past and address future changes that are on the horizon due to the rapid changes in healthcare, such as the use of electronic delivery systems and transfusions and transplants. Four elements of strict liability will be reviewed to determine how strict liability can be considered applicable to these scenarios. Additionally, potential recommendations will be given to hospitals on how to address these concerns on the horizon.

### *Purpose of Research*

There is little recent precedent literature regarding the applicability of the doctrine of product liability in hospitals. Although there is research to examine how healthcare providers are exempt from product liability cases, there is little research on how product liability could apply to healthcare organizations. This research utilizes a literature review to explore the application of strict liability in healthcare organizations with a specific focus on hospitals. The study will analyze the current applicability of strict liability laws in healthcare and offer potential suggestions for further expanding their usage. The following research questions will assist in this research.

1. What is the concept of strict liability?
2. How is strict liability currently applied to hospitals?
3. How will changes in strict liability impact hospitals in the future?

### **Literature Review**

Strict product liability has evolved over the decades since its establishment in 1963. Historically, the idea of liability without fault has prevailed in many cases. However, in recent instances,

liability without fault has become more limited to abnormally dangerous activities and consumer products (Brodnik et al., 2017, pg 107). Under the more recent application of the doctrine, if a person were near a construction site, regardless of the defendant's fault, the law would hold the construction company liable for the individual's injuries. The inherent danger of the construction site is the idea behind holding the construction company responsible. Strict liability can also be used in product defect claims. Plaintiffs are only required to prove the defective product injured them. Even if the company took measures to avoid any injury, it would still be held responsible for the injured party. Therefore, it is crucial to analyze how strict liability can be applied in a healthcare setting.

### *Strict Liability*

Strict liability began to take hold in the late nineteenth century when activists began to hold companies accountable for activities that produce risk (Sundholm, 2019, pg. 777). Strict liability was being enforced in the hopes of replacing fault-based law. Strict liability was hoped to deter accidents by placing the responsibility for the accidents on the businesses producing faulty goods or performing inherently dangerous activities. By the late 1960s, most American court systems began implementing some form of strict liability doctrine (pg. 778). At the time, strict liability was a comprehensive doctrine encompassing all claims that had some act of negligence in the hope of receiving compensation for plaintiffs regardless of the defendant's fault. The idea was that the manufacturers were in the most significant position to prevent product defects. These companies should find ways to mitigate harm by designing defect-free products (Alden, 2021, pg. 1635). However, as time has progressed, strict liability has shifted to include more than just promoting safety.

The current strict liability concept states a person is responsible for damage and loss caused by their acts and omissions regardless of fault (Brodnik, 2017, pg. 107). Four elements must be present to be considered a strict liability claim. First, the plaintiff must have sustained damages or injury. Second, the defendant was engaged in manufacturing, assembling, selling, leasing, or distributing the product. Third, the supplied product was defective, which, in turn, renders the product unreasonably dangerous, therefore meeting the most current definition of strict liability. Lastly, the defective condition was the approximate cause of the plaintiff's damages (Brodnick, 2017). Strict liability in this form is applied to tort law which concerns the concept of negligence. Product liability holds the manufacturer, assembler, seller, leaser, or distributor at fault. They are held accountable regardless of responsibility because it is often too difficult for the injured party to prove negligence. The burden of proof for the injured individuals becomes very hard because of the degrees separated between the consumer and the manufacturer (Alden, 2021, pg. 1634).

Historically, scholars have been concerned with the difference between strict liability and liability based on fault (Goldberg & Zipursky, 2016, pg. 743). Most recent scholars say strict liability is without wrongdoing (pg. 745). Therefore, defendants are required to pay damages regardless if they meet or fail to meet a standard of conduct. It is to say, you must be at fault for something for a problem to arise. The key differentiation between traditional torts of negligence and strict liability is the absence of proving that negligence (pg. 755). In most tort cases, plaintiffs have the burden

of proof in which they must show that the defendant was negligent in some way and their injuries resulted. However, an exception to this rule is the doctrine of *res ipsa loquitur* (the thing speaks for itself). In these cases, the facts and circumstances of the case permit an inference of negligence by the defendant (Brodnik, 2017, pg. 103). A denial of negligence does not mean negligence was not present.

Strict liability has led to large settlements in some instances. Johnson & Johnson had to pay out a settlement amount of \$4.7 billion to 22 women and their families due to a failure to warn that their talcum powder led to an increased risk of ovarian cancer (Lawrance & Weber, 2020, pg. 317). However, the U.S. Department of Justice noted that only 34% of individuals filing a strict liability suit won their case (pg. 317). In China, product liability cases are rare, but even they are seeing a growth in the number of claims filed (pg. 317). Therefore, as cases increase, there may be an extension outside the manufacturer.

### *Hospitals and Strict Liability*

Hospitals have not been strictly liable for defective products it provides in connection with patient treatment because the relationship between a hospital and a patient is service-related (Willis, 2007, pg. 193). For hospitals, this covers products used in connection with treatment, implanted products, and implanted prosthetic devices (pg. 194). Decisions such as those in *Hector v. Cedars-Sinai Medical Center* further define this concept that patients are not going into a hospital to purchase a product but to obtain an entire course of treatment. Therefore the hospital is a provider of a service rather than a seller and is not subject to product liability laws (pg. 196). This case set the precedent that hospitals cannot be sued for the strict liability of an implanted device because they are not selling them.

However, the healthcare profession provides services and the selling of products; therefore, the distinction between them is impossible to establish (Manić & Zejnelagić, 2018). Hospitals are the only means to receive implantable and prosthetic devices. Through this concept, hospitals are the only link between the patient and the manufacturer and can constitute them as a seller of the product (Manić & Zejnelagić, 2018). Additionally, since hospitals no longer fall under the exemption of the doctrine of charitable immunity, they are no longer philanthropic institutions but profit generators through medical "transactions" (Manić & Zejnelagić, 2018). As mentioned previously, the producer and consumer relationship have grown further apart. Less frequently, products and producers are seen, and more regularly, services and providers are seen (Alden, 2021, pg. 1636). Therefore, strict liability should be extended to services as it promotes several benefits. Alden mentions six benefits of this extension.

1. The promotion of safety
2. The cost of risk is spread among producers and servicers
3. Information asymmetry burden is reduced
4. Consumer expectations of service safety are fulfilled
5. The burden is placed on the party best able to prevent injury
6. Creates fairness by holding the party who benefits most from the risk accountable

The rationale behind extending strict liability to services would be the same as strict product liability (Alden, 2021, pg. 1641). However, the downfall could be that it reduces the innovation of these services, as providers are less likely to take a risk for fear of being held liable for errors.

### *The Digital Age of Strict Liability*

Electronic healthcare delivery systems have increased significantly since the passage of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009. The HITECH Act encourages providers to adopt electronic health record systems and improve the privacy and security of patient data by utilizing financial incentives (HIPAA Journal, 2022). Although the hardware, such as the computer itself, can be tied back to a manufacturer for a defect, computer software is far more complex (Brannigan & Dayhoff, 1981, pg. 124). This software is stored on hardware to be used by an individual or the hardware to perform a function. Another component of electronic healthcare is medical devices and their connection to these pieces of software that gather and analyze patient data. The Internet of Medical Things (IoMT) is the increasing technology landscape. The most basic function is healthcare devices' ability to communicate and exchange data across internet platforms to be stored on software (Corbin, 2019, pg. 2).

As repeatedly mentioned, strict liability is used to deter harm caused by an unreasonably dangerous product. Although this concept is not new, strict product liability for digital products has only been applied in rare cases (Corbin, 2019, pg. 26). Corbin notes there are three factors at play for the lack of application (2019). First, the doctrine for economic loss limits the types of damages remedied through strict liability. Secondly, it is hard to prove that the digital device was defective as the software cannot be viewed and analyzed without proper coding knowledge. Or the software could have been hacked by a third party, limiting the traceability of the defect. Lastly, as mentioned earlier, it is hard to differentiate software between a product or a service (Corbin, 2019, pg. 27). Incentivizing these companies may be the key to creating safer codes (pg. 34).

When discussing digital health services, the ownership of the service is an important concept. Ownership is usually straightforward; however, services cannot be owned, but a computer program that is created can be transferred to an individual and be owned and considered a product (Brannigan & Dayhoff, 1981, pg. 132). This fact strengthens the case for enforcing product liability on software. Therefore, end-user agreements should be eliminated, and software developers should take responsibility for the security of their products (Corbin, 2019, pg. 35).

When applying the concept of strict liability to the use of in-house software by hospitals, the four elements of strict liability claims should be applied. A case could be heard if the plaintiff sustained injuries or damages caused by the software. Since hospitals are “leasing” and utilizing the software or potentially developing it in-house, they can be seen as the responsible party in the case. Further proof would need to be given to show the software had a defect that caused harm to the plaintiff (Brodnick, 2017).

## **Transplants and Transfusions**

Organ transplantation is the only effective treatment for end-stage organ failure (Broeckx & Verhoeven, 2015). However, the amount of donors available does not match the quality of donors needed. There have been frequent cases of the disease being transmitted through these organ transplants. Organ recipients have suffered transmission of neoplasms and infectious diseases. For example, hepatitis, HIV, renal cell carcinoma, and lung cancer are a few of the transmitted disorders. The pressing legal concern is who is liable for the transmission of these diseases. For organs to fall under strict product liability, one must prove that the organ is a product. The Product Liability Directive defines a product as movable, even if it is incorporated into another movable (Broeckx & Verhoeven, 2015, pg. 224). When referring to human body parts, it is assumed that since all parts are removable, they could be considered a product. However, some argue that since a company does not manufacture these body parts, they are not considered a product and should be exempt from strict product liability suits.

If the plaintiff can prove that the organ is a product, they must also prove that it has a defectiveness that caused them proximate harm. Again, the strict liability doctrine notes that there must be defectiveness in the product and not necessarily negligence or fault on the producer (Broeckx & Verhoeven, 2015). Scholars note that the inherent risk of the transplantation is agreed upon before completion, which should eliminate liability on the side of the healthcare provider. The manufacturer is held liable for product defects in typical strict liability cases. In the case of organ transplants, the "manufacturer" would be the organ donor, which in some cases, may be deceased. At this point, there must be a new consideration of who should be held liable for "defects" (Broeckx & Verhoeven, 2015). Is the donor's family now responsible, the organization that initiated the transplantation, or is the healthcare provider and organization that completed the transfer responsible? It is believed that the doctor and hospital that complete the transplant should be held accountable. Unlike the donor or the facilitating organization, the doctor and the hospital act with an economic purpose and will generate income from this surgery. Following the logic of the four elements required to qualify as a strict liability claim, hospitals would qualify for liability as they are "selling and distributing" the organ transplant service. The hospital is the facilitator and, therefore, can be held liable.

In the case of blood transfusions, the blood bank has been held liable and considered the producer of the blood (Broeckx & Verhoeven, 2015). However, scholars argue that blood transfusion is a service, not a product, exempting it from the strict product liability doctrine. Continuing with this theory, scholars note that patients do not go into a hospital to receive a product but rather a service. A blood transfusion would treat the disease and therefore be considered a service. In these cases, it is said that strict liability should be excluded from all acts in healthcare (Broeckx & Verhoeven, 2015).

### **Practical Application**

Expanding strict liability to hospitals is necessary as the healthcare field grows. With continuous innovation, there will be times when services and products are produced within hospitals, and strict liability will be applicable. Healthcare providers, specifically hospitals, need to heed caution as

they proceed. They avoid negligence and prepare for possible claims where proving negligence is not required.

As the digital age of healthcare continues, the likelihood that healthcare providers will begin creating in-house software grows. As the concept of strict liability begins to shift, these software creators must realize there is a possibility they can be held liable if something goes wrong. Acts such as HIPAA already apply to these individuals, but it is believed that strict liability is also applicable. It is recommended that safeguards be put in place to prevent possible errors from occurring that could injure a patient. Similarly, as the line between products and services blurs and manufacturers become as prevalent as servicers, it is essential to note that strict product liability is likely to follow suit. Hospitals will be seen as sellers and distributors of these services and, as such, will meet the second element of the requirement for strict liability claims.

In the case of organ transplants and transfusions, the only party that generates a profit from this exchange is the healthcare organization and the provider. Therefore, if a problem should arise from the transaction, they should be partly held responsible for the negligence without having to prove fault by the injured party. The hospital was the last step in the process and should be the one to take the greatest caution in assuming risk. Therefore, hospitals should start holding themselves accountable, and strict product liability should be applied to them. The hospital will be seen as the distributor of the organ being transplanted. The hospital can be held liable if an issue arises due to an improper transplant. Therefore, hospitals need to ensure policies and procedures for the facility are in place to mitigate the risk of failure of these transplants. Strict liability does not require proof of negligence, so preventing a strict liability case requires avoidance of the problem.

### **Conclusion**

Strict liability is a legal concept that has traditionally been applied to products or acts that are unreasonably dangerous. As the field of medicine continues to progress, there is a case that strict liability needs to be extended to hospitals and other healthcare providers that offer services to patients. The link between manufacturers and end-users continues to grow. Therefore, it is encouraged that those closest to the end-user should hold a greater responsibility in preventing or detecting errors in products and services given to the consumer. In the case of healthcare providers and hospitals, this suggestion would apply to medical devices, prosthetics, transplanted organs, blood transfusions, and other services provided to the patient at the healthcare facility. A reevaluation of the current usage of strict product liability and the definition of a product and service is warranted. Hospitals should be held accountable for their services, regardless of the proof available to the patient if harm occurs.

### References

- Alden, K. (2021). Strict liability for the information age. *Brigham Young University Law Review*, 46(6), 1619–1645.
- Brannigan, V. M., & Dayhoff, R. E. (1981). Liability for personal injuries caused by defective medical computer programs. *American Journal of Law & Medicine*, 7(2), 123. <https://doi.org/10.1017/s009885880000486x>
- Brodnik, M. S., Rinehart-Thompson, L. A., & Reynolds, R. B. (2017). *Fundamentals of law for health informatics and information management* (3<sup>rd</sup> Ed). American Health Information Management Association.
- Broeckx, N., & Verhoeven, D. (2015). Transplanting diseases from organ donors in Western Europe: Fault liability or strict liability? *European Journal of Health Law*, 22(3), 207–238. <https://doi.org/10.1163/15718093-12341358>
- Corbin, B. A. (2019). When "things" go wrong: Redefining liability for the internet of medical things. *South Carolina Law Review*, 71(1), 1–44.
- Goldberg, J. C., & Zipursky, B. C. (2016). The strict liability in fault and the fault in strict liability. *Fordham Law Review*, 85(2), 743-788.
- Greenman v. Yuba Power Products, Inc., 59 Cal. 2d 57, 377 P.2d 897, 27 Cal. Rptr. 697, 13 A.L.R.3d 1049 (Cal. 1963).
- HIPAA Journal. (2022, November 27). *What is the HITECH act? 2022 update*. <https://www.hipaajournal.com/what-is-the-hitech-act/#:~:text=The%20HITECH%20Act%20encouraged%20healthcare,HIPAA%20Privacy%20and%20Security%20Rules>.
- Lawrence, A. T., & Weber, J. (2020). *Business and society: Stakeholders, ethics, public policy* (16<sup>th</sup> Ed). McGraw-Hill Education.
- Manić, S., & Zejnelagić, S. (2018). Strict product liability of medical employees for damage caused by the use of medical means with deficiency in the USA law. *Iranian Journal of Public Health*, 47(7), 1039–1040.
- Sundholm, B. (2019). Strict liability for genetic privacy violations in the age of big data. *University of Memphis Law Review*, 49(3), 759–811.
- Willis, R. R. (2007). Strict products liability and hospitals: Liability of the modern hospital and the use of surgically implanted medical products, tools, and prosthetic devices. *Western State University Law Review*, 34(2), 191-206.



**(Peer-Reviewed Article)****Waterparks' Economic Impact on Rural Kentucky Communities**

*Michael J. Bradley, Arkansas Tech University*

*Stephen Sims, SomerSplash Waterpark, City of Somerset*

*James N. Maples, Eastern Kentucky University*

**Abstract**

In recent years many rural communities look to diversify and bolster their local economy and many have begun to turn their attention to the tourism industry in hopes of attracting visitors and additional revenue. These rural communities are “focused on maximizing individual spending, and providing products and experiences as an incentive to tourists to stay longer and return on repeat visits” (Briedenhann & Wickens, 2004, p. 72). Also, waterparks, as well as amusement parks and theme parks, have become “motivators for tourism trips to many destination and core elements of the tourism product” (Raluca & Gina, 2008, p. 635).

*Keywords:* Economic impact, waterparks, rural economies, tourism, community revitalization

**Introduction**

Many rural areas in Eastern Kentucky are struggling due to local economic downfalls; whether, due to the loss of local manufacturers and businesses, a decrease in production of natural resources, or various environmental sanctions which have been levied upon natural resources over time (Ziliak, 2019). These rural areas and local economics need, and local leaders are working toward, new and innovative areas of economic diversity and increased areas of income. Specifically, community leaders are beginning to view tourism as an avenue to enhance the local economy, helping to revitalize local and regional communities and continue community development work. Waterparks and aquatic facilities have recently become an industry of interest to the public and private sectors. Communities are adding waterparks in hopes of drawing additional tourists to their communities to increase taxes and income that benefit government agencies and local businesses respectively. Publicly funded waterparks and aquatic facilities are the fastest growing sectors in the waterpark industry and currently are being built to appeal to local citizens and tourists (Sangree, 2015).

Currently, there is limited amount of research that examines how waterparks affect local communities. Additional research needs to be conducted to examine what impact waterparks have on local economies and if it would be feasible for communities in rural Eastern Kentucky to build such a facility. Also, within the public and private sectors of an economy, waterparks positively influence the economy by bringing in additional revenue to the community (Oxford Economics, 2013).

This study examines economic impact at five waterparks located in the state of Kentucky. Using an in-person survey, the authors collected data from 1,258 waterpark visitors to create mean expenditure patterns and then model those patterns in IMPLAN, an economic impact estimator.

### **Review of Literature**

In Kentucky, tourism is as important to the overall economy as it is in other states, counties, and cities across America. The travel industry contributed \$7.7 billion in direction impact for the state in 2021 (Tourism Economics, 2022). To be clear, this highlights the staying power of tourism in Kentucky, as the state witness only a slight decline from 2021 during the Covid-19 pandemic, when compared to previous years, such as \$8 billion in 2019. divides the state into nine regions, and each region showed gains in revenue in 2014. The variety of services, goods, and needs of tourists remains strong and tourism continues to be an important opportunity for rural areas seeking opportunity for development.

#### *Rural Tourism*

Rural areas with struggling economies are searching for different ways to increase revenue and economic development. Lane (1994) states “the powerful trends of industrialization and urbanization have steadily altered the economic and political positions of rural society” (p. 7). According to Briedenhann and Wickens (2004), “declining economic activity, restructuring of the agricultural sector, dwindling rural industrialization and out-migration of higher educated youth has led to the adoption, in many western nations, of tourism as an alternative development strategy for the economic and social regeneration of rural areas” (p. 71). Tourism is one avenue leaders are using to promote economic growth to revitalize these rural areas, of which some were once flourishing communities.

Rural communities continue turning to rural tourism because it has been “identified as a catalyst to stimulate economic growth, increase the viability of underdeveloped regions, and improve the standard of living” (Briedenhann & Wickens, 2004, p. 71). Benefits associated with rural tourism consist of increases in employment opportunities, income, and overall economic and population growth. “This kind of development has the potential to dramatically transform a stagnant rural community into a thriving community by attracting retirees, entrepreneurs, and young workers, diversifying the economy, and improving the quality of life with a broader array of goods and services” (Reeder & Brown, 2005, para. 2).

For communities to sustain a rural presence in the area, they must concentrate on maintaining their desired benefits while constantly assuring to minimize the harmful impacts upon the region (Lane, 1994). Overall, communities are “focused on maximizing individual spending, and providing products and experiences as an incentive to tourists to stay longer and return on repeat visits” (Briedenhann & Wickens, 2004, p. 72). Communities must realize “important differences exist in how tourism is viewed among tourists, residents, and tourism-sensitive business owners” (Marcouiller, 1997, p. 342). “Tourists tend to choose destinations based on physical appearance, human sociocultural comfort, and affordability in the short term” (Marcouiller, 1997, p. 342).

Businesses associated with tourism “tend to view development with an overriding interest in the resulting demand for the goods and services tourism creates” (Marcouiller, 1997, p. 342). Some “residents of destination areas experience a direct impact from tourist through crowding, localized price inflation, sociocultural cross-filtration, and economic opportunity” (Marcouiller, 1997, p. 342).

Community leaders must remember when “benefits and costs are assumed to be carefully evaluated, and when benefits exceed costs, the actor (citizens) will hold a positive attitude toward tourism. Then, if the reverse is true and costs exceed benefits, then a negative attitude towards tourism will be evident” (Wang & Pfister, 2008, p. 8).

### *Waterpark Industry*

The waterparks industry has proven to be a major contributor to the economy. In 2011, it was estimated waterparks contributed \$4.5 billion in direct economic impact and \$10.8 billion in total economic impact to the United States economy (Oxford Economics, 2013). The industry also provided employment for approximately 68,527 directly and 124,337 total jobs (Oxford Economics, 2013). Plus, it contributed an estimate of \$1.1 billion in tax incentive federally, and \$0.9 billion in local and state taxes (Oxford Economics, 2013).

Waterparks, as amusement parks, have become “motivators for tourism trips to many destination and core elements of the tourism product” (Raluca & Gina, 2008, p. 635). Municipal waterparks are perceived “as providers of leisure and recreation facilities for their local communities” (Milman, 2010, p. 233) while allowing a community to become a new haven for tourists. Waterparks gain support because they can “provide opportunities to gain political advantage, locally, nationally, and, in some cases, internationally” (Milman, 2010, p. 233).

It is important to remember that with “the growth of tourism in the past fifty years and the recognition of the economic benefits of tourism have led to the growth of purpose-built attractions” (Raluca & Gina, 2008, p. 636). Waterparks are being built to draw tourist to these areas; and, hopefully, they are having a positive effect upon the communities where they are located.

If we are to know the impact a waterpark has on a local economy, we must measure it. One way to measure the impact is to use the IMPLAN Model, a variation of an in-put out-put model. The IMPLAN Model is commonly used by educators and researchers within the tourism industry (Bonn & Harrington, 2008). The IMPLAN Model is regularly used by professionals looking to examine the total effect an industry may have on the economy, it includes direct impact, indirect impact, and induced impact on the economy.

### **Methodology**

The purpose of this study was to examine the economic impact of waterparks ~~have~~ on five communities in Kentucky. The study includes five Kentucky waterparks: SomerSplash Waterpark, Venture River Waterpark, Juniper Hill Aquatic Center, Paradise Cove Aquatic Park, and Tie

Breaker Family Aquatic Center. This study utilized on-site surveys to collect data needed for analysis. The survey itself was adapted from an economic impact questionnaire previously used by Crompton (1999). To calculate the impact of waterparks, the survey collected reported trip expenditures in twelve different economic impact categories (Table 3).

Table 1 describes survey collection responses by waterpark. The population for this study included local and non-local residents, that agreed to participate in this study, visiting a facility in Kentucky. This study assumes local residents would be deflected expenditures, meaning that while their expenditures would not normally be included in an economic impact study, the lack of other similar tourism options deflects their expenditures into the waterparks. For this study, a visitor of a waterpark is considered any adult that uses the waterpark in any way including, but not limited to participating in activities in or out of the water, casually laying pool side, watching family members, or socializing with friends. Typically, waterparks have a short operational season ranging from May to September. Throughout the season, surveys were distributed by the researcher randomly to individuals visiting the various waterparks and were then collected the surveys upon completion. In all, the researcher collected on-site surveys at all five research sites a total of 34 times from Memorial Day to Labor Day. The researcher approached a total of 1,258 possible adult visitors (age 18 and older) for this study; of those, 1,018 agreed to complete the on-site survey for an overall survey response rate of 80%.

*Table 1. Data Collection by Park*

<b>Facility</b>	<b>Attempted Survey</b>	<b>Declined Survey</b>	<b>Completed Survey</b>	<b>Location Response Rate</b>	<b>No. of Site Visits</b>	<b>% of Study Surveys</b>
SomerSplash Waterpark	452	52	400	.88	15	39.3
Venture River Waterpark	231	65	166	.72	5	16.3
Juniper Hill Aquatic Center	199	30	169	.85	4	16.6
Paradise Cove Aquatic Park	207	43	164	.79	5	16.1
Tie Breaker Family Aquatic Center	169	50	119	.70	5	11.7
<b>Total</b>	<b>1,258</b>	<b>240</b>	<b>1018</b>	<b>.80</b>	<b>34</b>	<b>100</b>

## **Results**

Table 2 examines the economic indicator descriptive statistics for the five study areas. Table 3 examines expenditures at each park by economic categories based on the survey results. Overall,

daily expenditures as a result of a visit to the parks ranged from \$21 to roughly \$65 dollars. Concessions (ranging from \$3.85 to \$9.32) and restaurants (ranging from \$2.92 to \$9.32) were generally the greatest expenditures. Low lodging expenditures implies that most trips to these waterparks are likely day visits rather than overnight visits. The exception would be Venture River, which, due to its location, may be more of a destination visit leading to overnight stays. This is also supported by higher entry expenditures, which is possibly evidence of fewer annual passes being used.

*Table 2. Economic Indicators by County Study Areas*

Water Park Name	SomerSplash Waterpark	Venture River Waterpark	Juniper Hill Aquatic Center	Paradise Cove Aquatic Park	Tie Breaker Family Aquatic Center
Gross Regional Product	\$2,093M	\$165M	\$3,022M	\$2,947M	\$6,095M
Total Personal Income	\$2,207M	\$245M	\$2,002M	\$2,912M	\$2,738 M
Total Employment	34,895	3,354	38,353	45,911	71,636
Number of Industries	205	126	191	202	217
Land Area (Square Miles)	662	216	211	441	721
Population	63,782	8,306	50,375	87,824	73,309
Total Households	25,948	3,719	21,568	35,581	27,433
Shannon-Weaver Diversity Index	0.70944	0.61677	0.62662	0.68478	0.50742

*Table 3. Visitation and Spending Patterns by Park*

Indicator	SomerSplash Waterpark	Venture River Waterpark	Juniper Hill Aquatic Center	Paradise Cove Aquatic Park	Tie Breaker Family Aquatic Center
Visitation	73,490	95,500	58,436	56,699	46,843
County	Pulaski County	Lyon County	Franklin County	Madison County	Christian County

Lodging	\$2.30	\$7.98	\$0.56	\$0.55	\$0.59
Concessions	\$5.41	\$9.32	\$3.85	\$4.27	\$6.06
Restaurant	\$7.45	\$7.93	\$3.51	\$5.24	\$2.92
Gas Station	\$1.34	\$1.70	\$0.80	\$1.39	\$1.02
Grocery	\$3.74	\$3.43	\$3.03	\$4.79	\$1.66
Gas	\$5.17	\$6.24	\$3.63	\$4.45	\$4.32
Entry	\$9.67	\$17.48	\$3.99	\$4.23	\$5.95
Parking	\$0.12	\$0.19	\$0.06	\$0.11	\$0.00
Park Rental	\$0.42	\$1.58	\$0.06	\$0.00	\$0.43
Retail	\$2.92	\$7.00	\$1.25	\$2.04	\$0.11
Entertainment	\$1.63	\$1.39	\$0.37	\$1.49	\$1.34
Services	\$0.23	\$0.61	\$0.27	\$0.91	\$0.02
Totals	\$40.40	\$64.85	\$21.38	\$29.47	\$24.42

Table 4 examines the result of economic expenditures at waterparks by location. For each waterpark, four measures are included: employment, labor income, value added, and output. Economic output from the IMPLAN modeling includes net employment from tourism modeled, which includes the summative value of all full time and part time jobs related to the study. Value added is a measure of contribution to the study area's gross domestic product and output is a measure of the value of industry production. As value added is part of output, these estimates should not be combined, instead the following information has a focus of labor income, a conservative measure of economic impact. Typical economic impact outputs include three effect levels: direct, indirect, and induced which aid in the examination of money flowing through a local economy. Direct includes the moment goods and services are purchased, while indirect includes expenditures created by businesses as part of preparing for the next sale and induced includes the expenditures of employees as part of their everyday lives. Unlike value added and output, these measures can be added together and are typically summated and shared (Crompton, 2020).

*Table 4. Economic Impacts of Waterpark Visitor Expenditures*

Location	Total Impact	Employment	Labor Income	Value Added	Output
<b>Somersplash</b>	Direct Effect	33.61	\$1,059,398	\$1,317,946	\$1,811,580
	Indirect Effect	1.82	\$56,267	\$104,364	\$224,916
	Induced Effect	6.35	\$216,371	\$378,603	\$716,220
	Total Effect	41.78	\$1,332,035	\$1,800,914	\$2,752,715
<b>Venture</b>	Direct Effect	55.02	\$854,754	\$1,621,942	\$2,872,447
	Indirect Effect	3.43	\$84,631	\$123,718	\$298,186
	Induced Effect	2.81	\$63,924	\$150,353	\$301,527
	Total Effect	61.27	\$1,003,309	\$1,896,014	\$3,472,160
<b>Juniper</b>	Direct Effect	12.48	\$447,377	\$506,730	\$717,806

	Indirect Effect	0.67	\$24,892	\$45,446	\$84,095
	Induced Effect	1.63	\$54,343	\$100,529	\$180,991
	Total Effect	14.78	\$526,612	\$652,705	\$982,892
<b>Paradise</b>	Direct Effect	16.74	\$315,113	\$385,889	\$763,819
	Indirect Effect	1.23	\$35,499	\$63,888	\$127,726
	Induced Effect	1.71	\$51,679	\$97,118	\$178,959
	Total Effect	19.68	\$402,290	\$546,895	\$1,070,505
<b>Tie Breaker</b>	Direct Effect	7.90	\$185,128	\$205,725	\$383,582
	Indirect Effect	0.45	\$15,716	\$35,717	\$62,256
	Induced Effect	0.32	\$11,614	\$21,212	\$39,193
	Total Effect	8.67	\$212,458	\$262,655	\$485,031

Overall, Table Four indicates that waterparks represent a valuable contribution to local economies in these five cases. For example, Venture River supports around 61 jobs in its study area. Likewise it created an estimated one million dollars in labor income in the study area. Somersplash similar supported many jobs for a rural county (41) and over a million dollars in labor income. Juniper Hill supported over half a million in labor income. Visitor expenditures at Paradise Cove in Madison County and at Tie Breaker in Christian County supported around \$402,000 and \$212,000 in labor income respectively.

Table 5 further examines the taxation results of these expenditures. The analysis indicates that waterparks are also beneficial to tax generation at the local/state level. For example, Venture River supported over a half million in taxes to the city, county, and state. Likewise, Somersplash brought in over 100,000 to the city, county, and state. In all cases, tax generation was focused in taxes on production and imports. At the Federal level, waterparks created their greatest impact on employee compensation taxes.

*Table 5. Taxation*

Location	Tax Type	Local/State	Federal
	Employee Compensation	\$2,887	\$160,986
SomerSplash	Property Income	\$0.00	\$3,052
	Tax on Production & Imports	\$102,609	\$16,224
	Households	\$33,741	\$74,336
	Corporations	\$4,548	\$27,588
	Total	\$110,044	\$282,186
Venture	Employee Compensation	\$6,876	\$129,729
	Property Income	\$0.00	\$2,288
	Tax on Production & Imports	\$488,152	\$54,028

	Households	\$17,660	\$41,966
	Corporations	\$3,818	\$22,747
	Total	\$516,506	\$250,758
Juniper	Employee Compensation	\$3,728	\$52,088
	Property Income	\$0.00	\$1,158
	Tax on Production & Imports	\$31,615	\$10,993
	Households	\$10,435	\$19,372
	Corporations	\$1,264	\$6,580
	Total	\$47,042	\$90,191
Madison County	Employee Compensation	\$1,218	\$41,653
	Property Income	\$0.00	\$2,129
	Tax on Production & Imports	\$70,414	\$8,273
	Households	\$10,608	\$20,943
	Corporations	\$1,075	\$5,195
	Total	\$83,315	\$78,193
Tie Breaker	Employee Compensation	\$107	\$19,442
	Property Income	\$0.00	\$1,029
	Tax on Production & Imports	\$26,743	\$5,714
	Households	\$2,472	\$5,442
	Corporations	\$262	\$1,398
	Total	\$29,584	\$33,025

### *Management Implications*

Waterparks present a useful form of economic impact. For example, SomerSplash Waterpark had an overall economic impact to the region by providing an estimated output of over \$2.75 million along with an estimated 41 jobs in the region. Venture River had an economic impact of an estimated output of over \$3.47 million and supported a net of 61 full-time positions. Juniper Hill Aquatic Center impacted their local region by providing an estimated output of \$982,892 and provided an estimated 14 full-time jobs. Paradise Cove Aquatic Center provided an estimated output of \$1.07 million in addition to over 19 full-time jobs to the community. Lastly, Tie Breaker Family Aquatic Center had an estimated economic impact of \$485,031 plus provided over eight full-time jobs to the region.

The results show that waterparks can have a major role by providing an increase in revenue to a region. An excellent example of this is the estimated impact of the five waterparks in this study. The estimated effects on a region ranged from \$485,000 to over \$3 million, while the estimated



impact on Kentucky's economy was over \$23.2 million. This type of impact on an economy could be crucial to rural areas that are turning to "tourism as an alternative development strategy for economic and social regeneration" (Briedenham and Wickens, 2004, p. 71). This study reveals positive economic outcomes; however that is not always the case. Sometimes, waterparks close for reasons such as low attendance, not being maintained properly, or becoming a burden on the community due to the cost of maintaining the facilities. Future research should examine if the cost to maintain a waterpark is worth the economic impact it provides to the community.

There were three implications the research noted regarding this study. Community leaders may use this study when deciding what size of a waterpark they want to build. Through better understanding of economic impact and size of specific water parks, community leadership could determine size and scope of their investment. Also, this study provides information related to financial outcomes of attracting tourists to a community. For example, when people visit a community for a water park experience, they may also spend money on fuel, food, and additional recreation and leisure endeavors.

There were also research limitations to the study. The lead author utilized local expenditures as deflected expenditures, meaning that they were counted as part of the economic impact analysis. In tourism-related studies, persons living inside the study area are often excluded from economic analyses. However, as there are few tourism options available in rural areas, the lead author treated these as funds spent there given there were no other options. Second, the study utilized only one restaurant category in the survey rather than specifying the differences between limited service (fast food) and full service (dine in restaurants with waitstaff). Separating these could offer more nuance to the findings. Third, the lead author utilized gas expenditures as retail gas sales. However, this could create error in how those expenditures move through the economy, whereas analyzing gasoline as a commodity chain may have given clearer results.

This study could provide important information pertaining to the questions the researcher utilized. The researcher could make an educated decision based on data obtained from the surveys. It provided information pertaining to the various impacts waterparks have on local communities, demographics of those attending waterparks in Kentucky, and if there are any barriers associated with waterparks. Based on the data, the researcher provided future thoughts for additional research studies that could be beneficial to the waterpark industry.

### References

- Bonn, M. A., & Harrington, J. (2008). A comparison of three economic impact models for applied hospitality and tourism research. *Tourism Economics*, 14(4), 769-789.
- Briedenhan, J., & Wickens, E. (2004). Tourism routes as a tool for the economic development of rural areas- vibrant hope or impossible dream? *Tourism Management*, 25(1), 71-79.
- Crompton, J. L. (1999). *Measuring the Economic Impact of Visitors to Sports Tournaments and Special Events*. Ashburn, VA: National Recreation and Park Association.
- Crompton, J. (2020). *Uses and abuses of IMPLAN in economic impact studies of tourism events and facilities in the United States: a perspective article*. *Tourism Review*, 75(1), 187-190
- Lane, B. (1994). What is rural tourism? *Journal of Sustainable Tourism*, 2(1-2), 7-21.
- Marcouiller, D. W. (1997). Toward integrative tourism planning in rural america. *Journal of Planning Literature*, 11(3), 337-357.
- Milman, A. (2010). The global theme park industry. *Worldwide Hospitality and Tourism Themes*, 2(3), 220-237.
- Oxford Economics. (2013). *The Economic Impacts of the US Attractions Industry*. Philadelphia: Oxford Economics.
- Raluca, D., & Gina, S. (2008). Theme park- the main concept of tourism industry development. *Annals of the University of Oradea, Economic Science Series*, 17(2), 641-646.
- Reeder, R., & Brown, D. (2005, September 1). *Rural Areas Benefit From Recreation and Tourism Development*. Retrieved Feb. 16, 2016, from USDA Economic Research Service: [http://ers.usda.gov/amber-waves/2005-september/rural-areas-benefit-from-recreation-and-tourism-development.aspx#.Vr\\_GgObm4xJ](http://ers.usda.gov/amber-waves/2005-september/rural-areas-benefit-from-recreation-and-tourism-development.aspx#.Vr_GgObm4xJ)
- Sangree, D. (2015). Analyzing the market and determining economic feasibility for waterpark projects. *World Waterpark Association Symposium & Trade Show*. Palm Springs: Hotel and Leisure Advisors.
- Tourism Economics. (2022). *Economic impact of visitors in Kentucky 2021*. Kentucky Department of Tourism. <https://www.kentuckytourism.com/sites/default/files/2022-08/Kentucky%20Tourism%20Economic%20Impact%20-%202021%20-%20CLIENT.pdf>
- UNWTO. (2013, Aug. 26). *International tourism demand exceeds expectations in the first half of 2013*. Retrieved Feb. 15, 2016, from World Tourism Organization: <http://media.unwto.org/press-release/2013-08-25/international-tourism-demand-exceeds-expectations-first-half-2013>
- Wang, Y. A., & Pfister, R. E. (2008). Residents' attitudes toward tourism and perceived personal benefits in a rural community. *Journal of Travel Research*, 1-10.
- Ziliak, J. (2019). Restoring Economic Opportunity for 'The People Left Behind': Employment Strategies for Rural America. *Expanding economic opportunity for more Americans: Bipartisan policies to increase work, wages, and skills*, 100-26.

## **Where did you learn that? Exploring How Sources of Knowledge Shape Leave No Trace Knowledge in Kentucky's Red River Gorge Rock Climbing Community**

*James N. Maples, Eastern Kentucky University*

*Michael J. Bradley, Arkansas Tech University*

*Ryan L. Sharp, Kansas State University*

### **Introduction**

Leave No Trace (LNT) offers an indirect management technique to minimize visitor impacts on the natural environment through seven guiding principles and fostering an outdoor ethic (Marion & Reid, 2001). Researchers have long outlined the potential environmental impacts of rock climbing (Spear & Schiffman, 1979; Cymerys & Walton, 1988; Larson, 1990; Camp & Knight 1998). In the face of area closures, climbers have adopted LNT as a central approach to educating present and future climbers on minimizing their impacts (Caslin and Archer, 2002; Maples, 2021). Substantial research has explored predicting if, when, and why an outdoor recreation user will practice LNT principals in the backcountry (Roggenbuck 1992; Miller et al., 2001; Vagias et al., 2014). In the case of climbers, recent studies have also explored to what extent climbers in various locations know about LNT (Maples et al., 2022) with recent studies exploring if knowledge of LNT principles correlated with practicing those ideas in the backcountry (Sharp et al., 2020; Clark et al, 2020).

Prior work has established with some confidence that knowing more about LNT should correlate with following those ideas in the backcountry. However, no studies to date have explored how different forms of learning about LNT might shape this relationship. The present study builds on existing knowledge about climbing and LNT by exploring how different sources of LNT knowledge might shape how respondent scores on a climbing-oriented LNT knowledge measure, the Leave No Trace Rock Climbing Measure (Maples et al, 2022). In effect, does the source and context of the knowledge statistically predict exactly how much one knows about applying LNT principles to real-life experiences?

In this study, the authors explore how different sources of LNT knowledge, LNT knowledge relationships, use patterns, and demographics might shape one's knowledge of LNT as it relates to climbing best practices. The authors utilize the LNTRCM to understand how these many variables impact one's holistic knowledge of LNT and how to practice those ideas in the backcountry. Using an online survey of rock climbers visiting Kentucky's world-famous Red River Gorge climbing area, the authors found climbers generally possess a good sense of LNT principles as they apply to climbing, but that problem areas (such as chalk use and toilet paper) still need to be addressed by national and local climbing organization efforts to educate climbers about LNT. Moreover, the authors found several sources of knowledge statistically (and positively) predict scoring higher on the LNTRCM, such as learning about LNT from the

Climber's Pact, watching other climbers, one's parents, public lands literature, scouting, web/internet sources, LNT workshops, and LNT classes. Further, the researchers found climbers who were female, signed the Climber's Pact, and/or learned about LNT before age 18 also scored higher in comparison. Overall, the results open a new opportunity for understanding how LNT education can minimize climber impacts across the nation and globe while also pinpointing climbers' overall performance on repeated problem areas like chalk use.

### **Literature Review**

Leave No Trace (LNT) is an established approach to teaching outdoor recreation users how their presence impacts the outdoor recreation environment and the experiences of other recreation users while also offering straightforward approaches for limiting these impacts (Marion & Reid, 2001). LNT offers an indirect approach to land management by training users to avoid problematic behaviors such as creating user trails, trampling vegetation, and disrupting wildlife. From a user perspective, indirect approaches are more desirable, as direct management approaches typically involve closures and permitting amid other efforts to alter visitation patterns (Wu, 2021). LNT principles can be taught in active (certification courses, workshops, user commitments) and passive approaches (kiosks, posting information on websites), increasing the convenience of this indirect educational strategy.

Perspectives on LNT Principles and their overall value can vary by location and context. For example, Backman et al. (2018) found national park visitors contradicted themselves in stating they were more apt to follow LNT principles but had difficulty in assessing the appropriateness of LNT-friendly actions. This further notes the difficulty in measuring behaviors, as here national park visitors understood they should practice LNT but did not always have the knowledge to correctly do so. Researchers have also examined various forms of LNT education approaches and, to some degree, their efficacy. The most recent assessment of educational methods used by the Center for Outdoor Ethics (which directs LNT education) found the most effective approaches focused on skills, location, activities, behaviors, context, and age-specific knowledge as it relates to minimizing impacts (Ross 2021). Context is especially of interest in the case of climbers because climbers adopted LNT under the premise of needing to limit their impacts if climbing were to continue on public lands (Siderelis & Attarian, 2004)

#### *Climbing and LNT*

Climbing has always left impacts on natural spaces, but it was the rise of sport climbing in the early 90s triggered rigorous academic conversations about how (and even *if*) rock climbing's impacts could be adequately managed. Traditional climbers, even in using mostly removable protection, have left noted impacts on the climbing environment even while keeping a clean climbing ethic (Taylor, 2010). Sport climbing only somewhat departs from this; where trad climbers focused on features like cracks which (with removable protection and permanent anchors when necessary) could be climbed safely, sport climbing ventured into the open and featureless spaces frequently found across rock faces. Sport climbing uses only permanent protection anchored into the climbing wall, effectively leaving behind signs of use. And where there may be

only a few trad routes on a rock wall (again focused on cracks, ledges, and climbable features) sport climbers were free to create routes most anywhere via drilled-in bolts. Sport climbing also arguably attracted a rush of gym climbers looking to apply their interests on public lands, often for the first time (Schwartz et al., 2019). Although sport climbing originated in Oregon's Smith Rocks in the 1980s, perhaps nowhere was its impacts more pronounced than in Kentucky's Red River Gorge.

The Red River Gorge saw a rapid expansion of sport climbing in the late 1980s and early 1990s and soon became a global sport climbing destination (Maples, 2021). However, the crushing effects of sport climbers arriving there did not pair well with the Daniel Boone National Forest's mandate to protect these spaces. This included preserving the Indigenous features and endangered white-haired goldenrod, both found in many of the new crags being used for sport climbing. A forest-wide closure on climbing in 1994 was explored as a test case for climbing access across the nation as the Daniel Boone National Forest considered the potential user impacts from sport climbing (Maples, 2021). Climbers faced a real threat to climbing access as further areas focused on direct policy decisions such as closures as a means for limiting or altogether ending these impacts (Archer, 1995; Caslin & Archer, 2002). In short, if climbing were to have a future on public lands, something would have to give.

Following national conversations about climbing access, numerous studies illustrated major impacts between climbers and the crags. For example, there was the risk in climbers disturbing nesting raptors and other wildlife (Cymerys & Walton, 1988; White, 1999). In a particularly damning study, nesting birds at observed at unclimbed cliffs acted perched by the edges and stayed on the cliff more compared to birds at climbing crags which stayed in the air and avoided the cliff (Camp & Knight, 1998). Well ahead of other researchers, Spear and Schiffman (1979) noted climbers were impacting proposed endangered species in Franconia Notch, New Hampshire. A study at Joshua Tree (a climbing mecca) found climbing disturbed plant life at the crag; the study recommended reduced access as a result (Camp & Knight, 1998). Studies around the same time in Minnesota (Farris, 1998), Niagara Falls, (Larson, 1990; Parikesit et al., 1995; Kelly & Larson, 1997), Washington (Malkin, 2000), Wyoming (Monz et al., 1994), and Northwest Illinois (Nuzzo, 1995) all repeated Camp and Knight's (1998) findings to various degrees, and several of these studies were published in the *Canadian Journal of Botany*.

Direct management of group sizes was another area of interest and it also showed early evidence of climbers showing an interest in self-policing and working within direct policies. Early work indicated climbers actually favored limits on group sizes and felt they were a safety hazard (Monongahela National Forest, 1996). Likewise, climbers felt large groups monopolized the area (Attarian, 2002). At Crowder's Mountain State Park climbers overwhelmingly supported limits on group activities, whether through permitting or through assigning groups only to select areas. In West Virginia, climbers and commercial guides collaborated with the National Park Service on limiting group size, evaluating if new parking was really needed, and how climbers might reduce their impacts on vegetation and wildlife (Steelhammer, 2000).

More recent work on climbing and LNT has focused on the relationship between LNT knowledge, attitudes and behaviors in the backcountry. Coulson (2016) establishes this framework in demonstrating climbers' *knowledge* of LNT was weakly correlated with climbing experience, skill, centrality of climbing to one's lifestyle, economic investment in climbing, and place attachment. *Attitudes* toward LNT practices were weakly correlated with climbing skill, centrality of climbing to one's lifestyle, one's knowledge of LNT, and place attachment. LNT *behaviors* were correlated with knowledge of LNT and climber skill. Similarly, Schwartz et al.(2016) demonstrated boulderers' attitudes about LNT largely aligned with LNT principles *except* when those principles would impact issues like safety and access. Issues included concerns over moving rocks or trees at the base of a boulder for safety reasons and removing lichen, moss, and so forth to establish a new route. Two studies on Canada's side of Niagara Falls (Thompson et al 2008; Thompson, 2009) found climbers had strong attachments to place, understood impacts as a long-term issue, and felt the climbing community would need to be part of the solution to keep climbing access a reality. A later follow-up study on the Niagara Escarpment noted climbers developed deep and lasting relationships with the site which manifested into motivations for environmental care (Schaefer, 2021).

Subsequent studies backed up this idea of the community solution and supporting indirect policies educating climbers about LNT. Studies have shown climber and land manager interests frequently overlap, such as concerns over group sizes, user experiences, establishing expectations for new routes and care of existing routes, and safety of all users while on public lands; these ideas can be perfectly captured in climbing management plans (Dougherty, 2011; Stephens, 2017; Anderson, 2021). LNT also represents an ideal opportunity for climbers and climbing organizations to partner with public land managers to help identify potential impact issues and craft a community-oriented solution (Gebhard, 2022). Historical evidence highlights cases in which climbers helped public land managers identify and protect endangered species which likely would have gone unnoticed by the land managers due to managing vast areas on limited budgets (Maples, 2021). If addressing climbing impacts can be a community-level approach, this leads to a need of engaging these measures and assessing their outcomes.

LNT has long been a conversation among climbers in the United States, but in recent years it has become redefined as a barrier to access. While climbing legends Royal Robbins and Warren Harding were debating over exactly what a clean climbing ethic entailed, they enjoyed largely unfettered access to Yosemite National Park (Roper, 1994). The rise of sport climbing and the full press against it sparked a concerted need for proactive approaches in educating the community. As LNT became a formalized program in 1990 through the Forest Service and National Outdoor Leadership School (and moreover right as sport climbing issues became prevalent in public lands) it became easier for climbers to assemble a clear procedure for training other climbers how to limit their impacts. Although there have been numerous sources,(such as almost countless articles on reducing impacts in climbing magazines, climbing technique guides, and especially regional/crag specific climbing guides over the last few decades) arguably the most organized effort has been the Climber's Pact, created by Access Fund. The Climber's Pact is interesting in that it is part knowledge and part social contract. Committing to the Pact involves climbing-specific behaviors which directly relate to LNT principles (such as staying on trails, disposing of human waste

properly, and minimizing chalk use and group sizes, and so forth). Next, climbers are asked on the website to commit to the Pact by name before being provided several in-depth conversations about LNT knowledge as it relates to climbing.

Climbers have also taken a more localized approach to education. For example, crag specific LNT workshops have taught LNT Principles alongside practicing approaches for interacting with climbers and talking about how their behaviors are creating impact issues. Select crags have created educational kiosks in partnership with public land managers, while nearly every climbing route guide includes material on how climbers can limit their impacts. Climbing training seminars for new climbers (particularly targeting gym climbers who have never climbed outdoors before) frequently include LNT training as a core part of joining the climbing community.

### *Measuring LNT Knowledge*

One issue in climbing LNT studies has been how one measures knowledge of LNT as it relates to climbing. The leading approach to measuring LNT knowledge is the Leave No Trace Attitudinal Inventory Measure (LNTAIM), a measure designed by Vagias et al. (2012). LNTAIM includes fourteen items directly referencing 6 of the 7 LNT Principles measured on a 7-point Likert scale. Vagias et al. note the principle of planning ahead is excluded as this happens prior to the trip. This measure can also be paired with other concepts, such as predicting climber behaviors and understanding their perceptions toward LNT in general.

Understanding when and why an outdoor recreation user will actively choose to practice LNT principles has remained a steady source of research in recent decades as land managers look for ways to minimize user impacts while maintaining access to public lands (Roggenbuck, 1992; Miller et al., 2001) with the most recent studies focusing on the relationship between knowledge and behavior. Vagias et al. (2014) study of LNT-friendly behaviors in Olympic National park and Glacier National Park indicated ideas like the difficulty of practicing LNT and group/social norms and pressure can predict choosing to minimize one's impacts in different situations, while educational messages and one's perceived knowledge of LNT proved less effective. The results also were inconsistent across the two study sites, indicating issues in replicating the findings across study areas. Two studies on climbing in Kentucky's Red River Gorge explored how the LNTAIM predicted self-reported climbing behaviors. Both studies found similar results that, among climbers, having more correct LNT knowledge influenced their LNT-related behaviors while in the backcountry (Sharp, Maples, and Gerlaugh 2020; Clark, Maples, and Sharp 2020). Both studies also indicated, through multiple variable regression, an unexpected result in controlling for personal income: a respondent's personal income also had a statistical impact on practicing LNT behaviors. One limitation noted in both studies included the issue of truly being able to link knowledge to behaviors through quantitative studies without also include a qualitative element of observing climbers in the field and linking their behaviors back to survey results. Both studies also recommended developing a climbing-oriented version of the LNTAIM.

Maples et al. (2022) designed, tested, and organized the Leave No Trace Rock Climbing Measure (LNTRCM), a 28-item scale adapting LNT principles to specific LNT-oriented climbing issues in

West Virginia's New River Gorge. Items measured included chalk use, addressing trees in the swingline, bringing dogs to the crag, and cleaning routes alongside LNT ideas found in all outdoor recreation forms (i.e., staying on trail, not feeding wildlife, and reducing group sizes). This study also stepped away from analyzing the relationship between knowledge and behavior to instead focus on potential problems in climbers' knowledge of specific LNT issues raised in early studies from the 1990s on as well as how demographic variables (such as sex, race, income, and education following the findings of Sharp et al., 2020 and Clark et al., 2020) might influence these results. The results were quite interesting. First, climbers scored well overall on LNT knowledge items with a few exceptions. Second, the researchers found demographics predicted responses to select items in the measure. Of these demographics, the most notable was being female, which predicted more LNT-friendly scores on nearly half of the scale items. These included climbing specific items like using less chalk and knowing regulations in advance as well as non-climbing specific items (using only designated trails and limiting group size, for example). Beyond providing a new way of measuring climbing LNT knowledge, the study opened the floodgates for exploring what else correlated with variations in this measure.

The studies on climbing and LNT collectively leave gaps in the literature that can be answered using the LNTRCM. First, more work is needed to explore the LNTRCM as a scale rather than individual items, and if these demographics (such as sex) apply overall, or only to a few specific cases. Second, more work is needed to explore Vagias et al. (2014) finding regarding social pressure and LNT knowledge: would feeling compelled by a social contract such as the Climber's Pact somehow enforce an expectation for climbers to know more about LNT practices? Third, the work by Gebhard (2022) adds the need to understand how interactions with and information from public land managers might shape that knowledge. Fourth, work by Colson (2016) and Ross (2021) raised the need to understand how ideas like experience, attachments to a particular crag. Finally, the present authors are personally interested in how childhood experiences, relationships, and proactive behaviors such as taking LNT courses might shape these results.

### **Methods**

Data from this study come from an online survey of rock climbers in Kentucky's Red River Gorge (The Red). While the earliest trad routes were established in 1969, the Red (as it is recently called) today includes a high concentration of sport climbing and is treated as a world climbing destination (Maples, 2021). This study explores results from Maples et al. (2021) using the full LNTRCM as a scale rather than individual items in hopes of understanding how these variables may shape LNT knowledge in a broader sense. The study also provides contrast to previous LNT climbing studies' findings to understand how these may function differently under a climbing-oriented scale.

This study replicates the LNTRCM, a 28-item list of climbing actions relevant to minimizing one's impacts (Maples et al., 2021). This scale lists items (including reverse-coded items) describing a specific climbing activity (e.g., removing excess chalk after climbing or burying toilet paper) and asks the respondent to identify the appropriateness of the behavior based on the seven LNT principles using a 5-point Likert ranking.



In all, 1,335 persons attempted the LNTRCM. Before creating the scale, the researchers dropped 15 cases who started the LNTRCM and did not complete it or skipped responding to a page (or more) of the scale's items. This left a handful of cases where the respondents skipped a single item while completing the scale. The researchers first analyzed the missing data to see if it is missing at random. All instances of missing data were less than one percent of cases and therefore not a concern for the analysis. The authors opted to replace the missing data with the mean value for that variable.

## Results

Table One outlines the items in the LNTRCM and respondent scores on each item. The table categorizes items to each of seven points in LNT and each item represents an effort to identify common ways in which climbers might choose (or chose not) to impact the crag's environment. Table One gives the reader a useful sense of what climbers do and do not know regarding ideal LNT practices. For example, the respondents are nearly lockstep in ensuring they pack out all trash created while climbing (mean of 4.99), *not* carving into rock walls (1.02, reverse coded), *not* publicly playing music while climbing (1.07, reverse coded), *not* pooping close to the trail (1.09, reverse coded), knowing the regulations for the crag where they will climb in advance (4.89), using only designated trails (4.88), *not* feeding food scraps to wild animals (1.13, reverse coded), *not* creating shortcuts/switchbacks to the crag (1.18, reverse coded), and *not* leaving feces on top of the ground to biodegrade (1.20, reverse coded). In fact, nearly all items indicate climbers understand how to reduce their impacts. These include recent efforts to not stress nesting birds (4.75), a common reason for self-imposed climbing closures across the nation.

*Table 1. Description of Items and Responses in the Leave No Trace Rock Climbing Measure (LNTRCM): Alpha: .7725 \*=reverse coded items (n=1,032)*

<i>Variable</i>	<i>LNT Area</i>	<i>Mean</i>	<i>StDev</i>
<b>Knowing the climbing regulations where I'll climb in advance.</b>	1	4.89	0.39
<b>Limiting my group size to protect the climbing area.</b>	1	4.59	0.62
<b>Carpooling to the climbing area whenever possible.</b>	1	4.71	0.54
<b>Using only designated trails in and around climbing areas.</b>	2	4.88	0.39
<b>Travelling in a single file whenever walking with others on the trail.</b>	2	4.43	0.71
<b>Creating trail shortcuts when trails do not go straight to the climbing area.*</b>	2	1.18	0.57
<b>Packing out all the trash I create while climbing.</b>	3	4.99	0.06
<b>Minimizing the amount of chalk I used.</b>	3	4.08	0.82
<b>Packing out any forgotten or discarded gear I find.</b>	3	4.64	0.63
<b>Leaving my feces on top of the ground so it will biodegrade.*</b>	3	1.20	0.62
<b>Urinating at least seventy steps from the trail.</b>	3	4.26	0.95
<b>Burying my toilet paper.*</b>	3	3.19	1.67
<b>Pooping close to the trail.*</b>	3	1.09	0.45
<b>Brushing off excess chalk on the route when I am done climbing it.</b>	3	3.97	0.95
<b>Taking small rocks home with me as mementos.*</b>	4	1.71	0.73
<b>Dislocating rocks that make it hard to climb.*</b>	4	1.58	0.92
<b>Cleaning vegetation off the wall while climbing.*</b>	4	2.57	1.04

<b>Using a portable stove rather than start a campfire should I need to cook something at the crag.</b>	5	4.57	0.74
<b>Making a campfire at the climbing area to cook or keep warm.*</b>	5	1.40	0.75
<b>Cutting down trees that are in the way of the route.*</b>	6	1.39	0.78
<b>Using tree-safe straps or a protective cloth to protect tree bark if using a hammock.</b>	6	4.53	0.82
<b>Keeping a dog on a leash or tethered at all times when I bring it to the crag.</b>	6	4.60	0.68
<b>Packing out my dog's feces when I bring it to the crag.</b>	6	4.79	0.58
<b>Feeding my food scraps to the local wildlife.*</b>	6	1.13	0.47
<b>Not climbing a route if I knew it would stress out nesting birds.</b>	6	4.75	0.69
<b>Making sure everyone can hear music if I listen to it while climbing.*</b>	7	1.07	0.34
<b>Carving names into the climbing wall.*</b>	7	1.02	0.27
<b>Leaving tic marks to help climbers that are not in my group.*</b>	7	1.63	0.84

There are four items of concern to note, however. One is the ambivalence toward exactly what to do with toilet paper. The table suggests climbers understand they should not poop near trails or leave this on the ground. However, burying toilet paper has, of all items, the most neutral response of the entire scale with a mean of 3.19.

Note climbers are now moving toward packing out toilet paper whenever possible, as well as packing out feces in arid environments (Clark et al, 2020). Next is the issue of cleaning routes, which includes removing vegetation. Here, climbers scored a mean of 2.57 on a reverse coded item. The overall unsureness over this item also matches up with one of the greatest concerns about climbing's environmental impacts: scraping away vegetation, lichen, and more away from the rock face. The final item addresses brushing off excess chalk after climbing (3.97). On a related note, minimizing chalk use scored a mean of 4.08. Although this indicates agreement with the practice, it also happens to be the weakest level of agreement on the scale.

When examined as a scale, the LNTRCM has a Cronbach's Alpha of .7725, which indicates it functions as a quantitative scale. Note an item analysis further revealed dropping items would not improve the score beyond its current Alpha value. This replicates findings from Maples et al. (2019), where the scale similarly scored above .70, which is a common minimum for an acceptable scale. Note the researchers have standardized the LNTRCM so its mean is effectively zero and its standard deviation around 1. This supports using the scale for regression analyses later in this study as it makes interpreting significant results more intuitive.

Table 2 explores respondents' sources of LNT knowledge. Note this measure allows respondents to mark more than one category. This table reveals a few valuable pieces of information about climbers and where they are getting their LNT knowledge. For example, friends (at 55%) indicated the most popular source of the categories listed. Respondents also indicated learning about LNT by learning from other climbers while at the crag (43%) and by watching other climbers (39%). This highlights that the people immediately around a climber at the crag (e.g. their friends and other climbers) may have a notable impact on their LNT knowledge as a valued and trusted source of information. Another important source is from the respondent's parents. This makes sense as parents are often how children first encounter the outdoors and learn their core values and ethics

regarding the outdoors. Other common sources include web media such as websites about limiting impacts (40%), public lands literature on LNT (35%), local climbing organizations (34%), the Climber's Pact (29%), public land personnel (27%), and scouting (25%). Note several of these sources include climbing-oriented LNT knowledge, hinting this may be the easiest route to connecting with climbers regarding LNT information.

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>St Dev</i>	<i>Min</i>	<i>Max</i>
<b>Climbing sources</b>					
Climber's Pact	1,369	.29	.45	0	1
Access Fund Conservation Team	1,369	.06	.24	0	1
Access Fund website	1,369	.22	.41	0	1
Local climbing organization programs	1,369	.34	.47	0	1
AAC conservation programs	1,369	.06	.24	0	1
Gym kiosks	1,369	.10	.30	0	1
Watching other climbers	1,369	.39	.48	0	1
Info from another climber while climbing	1,369	.43	.49	0	1
<b>Family and friend sources</b>					
My parents	1,369	.40	.49	0	1
My grandparents	1,369	.07	.26	0	1
Other family members	1,369	.13	.34	0	1
My friends	1,369	.55	.49	0	1
<b>Public lands sources</b>					
Park/Forest Service personnel	1,369	.27	.44	0	1
Park/Forest Service literature	1,369	.35	.47	0	1
<b>Other Sources</b>					
Classes/Courses on LNT	1,369	.17	.37	0	1
Boy/Girl Scouts or similar organizations	1,369	.25	.43	0	1
Website/Internet sources	1,369	.40	.49	0	1
Popular media (including magazines and books)	1,369	.29	.45	0	1

Table 3 explores behaviors which may impact the respondent's knowledge of LNT. These include courses on minimizing one's impacts, the timing for when one learns LNT, signing public agreements to minimize impacts, and climbing-oriented actions believed to relate to environmental impacts. In all, 78% signed the Climber's Pact, which asks signees to publicly declare they will minimize their impacts. Overall, 61% of respondents indicated they learned about LNT before the age of 18. This means more than likely a respondent would have a base level of knowledge prior to learning about climbing-related LNT elements. In all, 52% reported they first began climbing indoors; the remaining 48% either began climbing outdoors or began climbing indoors and outdoors at or around the same time. Less common are the three sources of direct LNT knowledge: 28% completed an LNT awareness workshop, 10% completed a LNT Trainer Course, and 5% completed the more detailed Master Educator Course. The table also includes a measure of the

respondent's self-ranked LNT knowledge going into the study. There, respondents averaged a 7.58 on a ten-point item. Here, a ten indicated having excellent knowledge of LNT practices. Table 3 also explores demographics for this sample. When asked about the three most common approaches to climbing in Kentucky, 94% indicated engaging in sport climbing (which uses permanent protection bolted into the rock face), 40% in trad climbing (which uses removable protection), and 35% reported bouldering (using no rope or protection save fall pads while climbing large boulders). Respondents spent around 30 days per year in the Red and 66 days per year gym climbing in any location as a point of comparison. About one in five reported bringing a dog climbing with them on a typical trip. Turning to common demographics, 34% indicated being female with the average respondent age being 34. Note age is slightly impacted by the survey only including persons aged 18 and above. Around 11% of respondents indicated their race included a race other than white or in addition to being white. In sum, 85% of respondents indicated either having a four-year or advanced degree. Concomitantly, about one in four reported incomes in the six-figure range. Notably, measures on sex, age, education, and personal income reflect what has been found in other recent climbing studies (Maples et al, 2022; Sharp et al, 2020; Clark et al, 2020).

*Table 3: Behaviors Affecting Respondent's Knowledge of LNT*

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>St</i>	<i>Min</i>	<i>Max</i>
LNTRCM Score (Standardized)	1,320	.00	.41	-6.14	.58
Self-ranking on LNT Knowledge (10=Expert and 1=Novice)	1,348	7.58	1.73	1	10
Was taught LNT before Age 18	1,298	.61	.48	0	1
Signed Climber's Pact	1,093	.78	.41	0	1
Completed LNT Master Educator Course	1,325	.05	.22	0	1
Completed LNT Trainer Course	1,317	.10	.30	0	1
Completed LNT Awareness Workshop	1,292	.28	.45	0	1
Started climbing indoors	1,369	.52	.49	0	1
Climbs trad in RRG	1,369	.40	.49	0	1
Climbs sport in RRG	1,369	.94	.22	0	1
Boulders in RRG	1,369	.14	.35	0	1
Days per year typically spent climbing (any kind) in RRG	1,369	20.09	30.47	0	365
Days per year typically spent climbing in a gym, any location	1,369	104.89	66.81	0	338

Typically brings dog with them while climbing	1,309	.19	.39	0	1
Respondent is female	1,306	.37	.48	0	1
Respondent is person of color	1,271	.11	.32	0	1
Age, in years	1,314	34.44	10.72	18	81
Respondent has Bachelor's degree	1,315	.44	.49	0	1
Respondent has Graduate degree	1,315	.41	.49	0	1
Respondent annual personal income >\$50K but <\$100K	1,230	.38	.48	0	1
Respondent annual personal income >\$100K	1,230	.24	.43	0	1

Table 4 begins the statistical analysis exploring which (if any) variables impact the respondent's LNTRCM score. Table Five focuses on sources of knowledge. Each variable has one bivariate model analyzing the relationship between source of knowledge and the LNTRCM score. Looking over the entire table, only a handful of variables proved statistically significant in predicting the LNTRCM score. For example, getting information from the Climber's Pact predicted the LNTRCM score. There, using this as a source of knowledge correlated with a slightly higher score on the LNTRCM ( $p=.01$ ). Likewise, getting LNT information from the Access Fund also had a significant, small positive effect on the LNTRCM score ( $p=.01$ ). Watching other climbers as a source of knowledge also slightly increased the LNTRCM score ( $p=.05$ ). Non-climbing informational relationships also occasionally impact respondents' LNTRCM score. Having parents who functioned as a source of LNT knowledge resulted in scoring slightly higher on the LNTRCM ( $p=.01$ ). Second, learning about LNT via National Park and/or Forest Service literature on LNT correlated with slightly higher LNTRCM scores ( $p=.05$ ). Respondents indicating an LNT course was a source of knowledge scored higher on the LNTRCM ( $p=.01$ ). Likewise, respondents indicating they learned about LNT in some form of scouting as a child scored higher on the LNTRCM ( $p=.01$ ). Finally, respondents using websites or the Internet as a source of knowledge similarly scored higher on the LNTRCM than those not indicating this category ( $p=.01$ ). That said, it is worth noting across this entire table the R squared values effectively hovered around 1%, hinting that while knowledge is significant, it is only a small part of explaining LNTRCM scores.

*Table 4. Regression of Knowledge Sources on LNTRCM*

	Bivariate Analyses on Standardized LNTRCM Score						
<b>Climber's Pact</b>	.06** (.02)	-	-				
<b>Access Fund website</b>	-	.07** (.02)	-				
<b>Watching other climbers</b>	-	-	.04* (.02)				
<b>My parents</b>				.06** (.02)			
<b>Park/Forest Service literature</b>					.05* (.02)		

<b>Classes/Courses on LNT</b>						.06* (.02)		
<b>Boy/Girl Scouts or similar organizations</b>							.05* (.02)	
<b>Website/Internet sources</b>								.05* (.02)
<b>Model R2</b>	.007	.006	.003	.007	.004	.003	.003	.004
<b>F</b>	9.55**	8.20**	4.73*	9.24**	6.51*	5.65*	6.00*	6.03*

Table 5 explores individual respondent demographics and behaviors and how these might impact their scores on the LNTRCM. First, there interestingly is a correlation between self-ranking of one’s LNT knowledge and their score on the LNTRCM (p=.001). Next, learning about LNT prior to age 18 also correlates with higher LNT scores (p=.01). Signing the Climber’s Pact (which is examined separately from listing it as a source of knowledge, see prior table) also indicated a higher score on the LNTRCM (p=.001). Likewise, completing an LNT awareness workshop positively correlates with a higher score (p=.01). Finally, being female correlated with having a higher score on the LNTRCM (p=.001).

*Table 5: Regression of Behaviors Related to LNT and Effects on LNTRCM Outcomes*  
(table lists significant results only, where p=.05 or less)

<i>Variable</i>	<b>Bivariate Analyses on Standardized LNTRCM Score</b>				
Self-ranking on LNT Knowledge	.03*** (.01)	-	-	-	
Was taught LNT before Age 18	-	.05** (.02)	-	-	
Signed Climber's Pact	-	-	.11*** (.02)	-	
Completed LNT Awareness Workshop	-	-	-	.07** (.02)	
Respondent is female					.12*** (.02)
<b>Model R2</b>	.033	.005	.017	.007	.024
<b>F</b>	45.67***	6.91**	18.62***	9.86**	35.15***

### Discussion

The results of this study offer several departure points for continuing to minimize the impacts of climbing, identifying new best practices for existing issues, expanding on improving access to updated LNT information, and further investing in climbers’ LNT education on the local, regional, and national levels. The first step is for climbing communities, especially local climbing organizations (LCOs) and national climbing organizations (NCOs), to address known existing and common issues where climbing impacts the environment, as noted in the first table. Based on the findings of the present study as well as Maples et al. (2022), these include talking about what to do with toilet paper, minimizing chalk use, removing chalk post-climb, and addressing the removal

of vegetation. Some of these are easy: climbers should learn to pack out toilet paper in *all* instances. Although there's room for the option of burying toilet paper in certain conditions, telling climbers to universally pack it out takes out the guesswork. Recall Backman et al's (2018) findings regarding National Park users inconsistencies over planning to practice LNT principles but also not knowing how to correctly do them. By having a universal and clear message, climbers can address this issue quickly. This will also not be a major departure, as many climbers are already packing out toilet paper and feces via *wag bags* while climbing big walls in arid areas.

Next, climbing communities must address chalk use in new ways. Chalk use has long been a point of conversation among the community since its appearance in the 1950s to enhance grip of the rock. Chalk transforms into two issues for climbers: leaving behind chalk on the rock wall and use of chalk as beta after a climb. These are visual and biological issues: visual in that the chalk lessens the wilderness experience of others by altering the appearance of the area and biological in potentially altering rock pH and impacting organisms found there. The present response to the visual element is brushing away the chalk and, in some cases, using a spray water bottle to increase removal. This is not without issue. The scrubbing and water will still impact biological elements of the rock wall, and this can be hard when the same holds are used by myriad climbers, day in and day out. Further, chalk goes beyond the visual: Hepenstrick et al. (2020) noted the microscopic presence of chalk even without visual signs of it, meaning even when we cannot see it, chalk may still impact the area. As such, best practices for minimizing chalk use are needed. These may include limiting loose chalk in favor of chalk balls, exploring liquid chalk, and considering climbing with less chalk overall. Future studies should also examine the social and psychological uses of chinks while climbing as a source of artificial confidence (i.e., the chalk providing confidence a hold will work), as a distraction while resting limbs (e.g. chalking up to waste time), and excess chalk use prior to climbing (such as before one is even tied in).

Vegetation removal (which also can include dirt and loose rock removal) is probably the one area where climbers (and really any form of outdoor recreation) are going to have longstanding, fair critique from environmental researchers (Salesa & Cerdà, 2020). In one sense, cleaning a route has little difference from creating a trail through a public land (and in fact climbing routes are often considered trails in management plans). However, climbing target a specific line of approach which may inherently overlap with protected species. As such, NCOs should establish a set of best practices for vegetation (and dirt and rock) removal when establishing a new route and maintaining an existing route. Best practices are needed also for deciding which areas should be isolated from development, such as instances where endangered species are present. This approach should be done in tandem with biologists and geologists as well as public land managers to get their opposing perspectives and find common ground which allows access while curtailing excessive removal.

This study provides new information about how sources of knowledge matter. There are several themes to explore here. At least some climbing-specific measures were proven to have a desirable effect on LNT climbing knowledge, specifically the Climber's Pact (learning from it and publicly signing it), the Access Fund website, and climbers watching other climbers. The latter is especially intriguing as it hypothetically means having more climbers who know how to practice LNT at the crag being a residual source of LNT knowledge for other climbers. These findings also give some

credibility to the Climber's Pact, arguably the biggest national effort to teach climbers about their impacts. This pact again confirms what Vagias et al. (2014) found regarding community adherence to social contracts. As such, seeing similar efforts develop across all outdoor recreation areas (each with specific knowledge for their users) could have a very desirable effect over time. Likewise, this study provides inconsistent evidence that, while sport-specific training on LNT can be useful, not all forms appear to have the same effect. For example, watching other climbers proved significant while getting LNT info from other climbers did not. This may also indicate a personal drive for the individual to adhere to LNT, something captured in a social contract approach to education.

These results also posit relationships are an unexplored part of understanding the creation of a minimum impact mentality and wilderness ethic, and they need more research. Recall parents represented a statistical predictor for having higher LNT climbing scores. This demonstrates teaching outdoor recreation users today about LNT should have longstanding positive results as they bring their kids into the crag. Notably, kids are also a common sight at climbing crags with families working together to watch children while their parents rotate out to climb. On a related note, scouting's statistical significance overlaps with learning about LNT before age 18 as predicting higher LNT climbing knowledge. These are new areas of research to consider. Notably, climbing is now a part of Scouts BSA and Girl Scouts camp programming, as is LNT training. Similarly, numerous programs focus on getting kids into the woods and thinking about conservation, with the Park Service's Junior Ranger arguably the most known. Thus, these findings call for more studies on sources of knowledge relative to persons under age 18 to understand the long-term impacts.

The results included a mix of active and passive learning opportunities. Not at all surprisingly, taking an LNT Awareness Workshop improved scores. These workshops are relevant to climbing and have frequently been offered onsite near the crags where climbers are found. They create a destination event for the community, allowing friends to take the workshop together and apply their findings in climbing-relevant examples. The lack of significance in the two LNT courses may appear controversial at first, but could likely be explained in having the basics to apply minimal impact principles is not something that requires certification. These two courses are designed for education others on LNT, while the workshop can focus on the individual. There's also the possibility that a very comprehensive knowledge of LNT may present contradictions needing addressed. For example, an LNT scholar may see the complications in interacting with wildlife, but also understand there are public lands policies that are effectively doing just that in reintroducing native species back into certain areas. They may similarly see a line between LNT applications and safety/permissible use (e.g. removing a tree from a crag's swingline). Moreover, the study does not explore *when* the LNT certification occurs and if it outdated, only that it has occurred. There's room for more work here. Similarly, this does open the window for LCOs/NCOs to consider offering LNT courses directly related to climbing and NCO expansion on awareness workshops which can target specific issues relevant to a single crag if needed.

In thinking about passive learning, the Park Service and Forest Service literature stands out as an exciting finding. This supports having informational kiosks and pamphlets available to outdoor



recreation users exploring how they can limit their impacts. These are effectively *to-go* packets of knowledge which can be present long after the climber has left the crag. Similarly, climbers looked to their own organizational websites as well as the Internet in general for LNT knowledge. Working on getting all this information distributed widely (and ensuring it is updated and accurate) could ostensibly go a long way in educating climbers, although it does depend on either a spark of individual interest or organizations finding ways to get this information in front of climbers. There may also be some rationale why talking with public land employees did not prove insignificant. Maples (2021) notes that climbers and Forest Service officials have spent effectively two decades rebuilding their ties following a closure in the early 2000s. Trust takes time and provides yet another reason why climbers should be working with their public land managers.

This study replicates and complicates what is known about LNT knowledge and several demographic variables found significant in previous studies. Most notably, this study replicates Maples et al.(2022) findings regarding females scoring higher on several items from the LNTRCM. In the present study, the authors also show this applies to LNT knowledge *overall*. It was previously argued inclusivity efforts among the climbing community have created a new learning environment in which new female climbers can obtain climbing skills while also being exposed to LNT training (Maples et al., 2022). Although it switches from a discussion of sex to gender, this overlaps well with Schaefer's (2021) findings regarding the exclusion of women climbers and also a lack of mentorship opportunities for women in the climbing community. Other findings were not consistent, but with possible explanations. For example, findings by Sharp et al. (2020) and Clark et al. (2020) note income may shape LNT knowledge, but findings in this study do not support this hypothesis. However, this could be explained in using a measure (the LNTAIM) aimed at camping and hiking rather than climbing. Using a different scale may be to blame here, but more work is needed.

### *Limitations*

As will all studies, there are limitations to how this new information can be utilized. One issue not addressed in this study is the impact of the primary or even first source of LNT knowledge compared to subsequent. A climber, with time, would certainly be exposed to LNT knowledge by watching other climbers at the crag, but does this somehow override or complement the climber learning about LNT from a master trainer course (just as one example). There is also an element of trust in sources which is not explored: for example, would a climber take their climbing partner sharing LNT knowledge differently than a total stranger? Similarly, could the context of how park managers are received at a particular location change how climbers might react to public lands LNT kiosks or helpful conversations with a ranger? Future studies should explore this idea, particularly building on Maples (2021) argument climbers are guests on public lands and should be expected to follow the rules while also being good land stewards on private climbing preserves. This study does provide initial evidence to reject (at least now) the gym to crag issue by finding no real difference between the LNTRCM for climbers starting in gyms versus outdoors. One complication here is the researchers do not know how long the climber has been climbing outdoors versus indoors, and if that timeline matters. Similarly, researchers should examine the chalk use patterns for gym versus outdoor start climbers and understand and identify best practices. It is

conjecture, but the authors have noted (and climbers often discuss) the idea of chalk as a form of courage; chalking up while one “shakes out limbs” is an environmentally unfriendly action because it creates excess chalk that is extraneous to the climbing process.

One easily overlooked element of the findings of this paper is the consistently low R squared outputs, which indicate while a source may be statistically significant, it is not the end-all explanation of the relationship. In fact, there are many more components which were not measured in this study that somehow explain the LNTRCM. This study establishes merit to the idea that the source of knowledge can matter, more work is needed to establish other areas of knowledge that have been overlooked in the present study. It is also important not to use these results as dismissing the value of a particular approach. Remember this study is limited to one form of outdoor recreation in a specific area, meaning these results are not yet something which can confidently be adapted to a larger population. As such, a national study would be useful to establish how sources of knowledge matter to LNT learning across the nation’s climbing communities.

## References

- Archer, C. J. (1995, November 10-12). *Survey of legal issues affecting climbers. Presented at the Access Fund Regional Coordinator Summit*. Unpublished manuscript, Access Fund archives, Boulder, CO.
- Attarian, A. (2002). Managing Groups at Climbing Sites. *Proceedings of the 16<sup>th</sup> Annual International Conference on Outdoor Recreation and Education*.
- Backman, C. L., Vaske, J. J., Lawhon, B., Vagias, W., Newman, P., Coulson, E., & Taff, B.D. (2018). Visitors' views of leave no trace principles across a national park, a National Forest, and Three State Parks. *Journal of Park and Recreation Administration*, 36, 41-54.
- Camp, R. J. & Knight, R.L. (1998). Rock climbing and cliff bird Communities and Joshua Tree National Park, California. *Wildlife Society Bulletin*, 26(4), 892-898.
- Caslin, C. & Archer, C. (2002). A Survey of Legal Issues Affecting Climbing. 2<sup>nd</sup> ed. Unpublished manuscript, Access Fund archives, Boulder, CO.
- Clark, B.G., Maples, J.N., & Sharp, R.L. (2020). Awareness and Application of Minimum Impact Practices among Rock Climbers in the Red River Gorge, Kentucky. *Journal of Outdoor and Environmental Education*, 23, 73-86.
- Coulson, E. (2016). *Shawnee National Forest Rock climbing and front-country recreation: Leave No Trace, awareness, attitudes, and behaviors*. Dissertation, Southern Illinois University Carbondale.
- Cymerys, M. & Walton, B. J. (1988). *Raptors of the Pinnacles National Monument: Past and present nesting and possible impacts of rock climbers*. (Technical Report No. 30). Davis, CA: Cooperative National Park Resources Studies Unit, University of California at Davis.
- Dougherty, K. (2011). *Rock climbing experience and climbing management plan implications in Acadia National Park: A qualitative approach*. Thesis at The University of Maine, Master of Science.
- Farris, M. A. (1998). The effects of rock climbing on the vegetation of three Minnesota cliff systems. *Canadian Journal of Botany* 76(12), 1981-1990.
- Gebhard, S.D. (2022). Interactions Between Minnesota Rock Climbers and State Park Staff: toward What End? Master's thesis, University of Minnesota.
- Hepenstrick, D., Bergamini, A., & Holderegger, R. (2020). The distribution of climbing chalk on climbed boulders and its impact on rock-dwelling fern and moss species. *Ecology and Evolution*. <https://doi.org/10.1002/ece3.6773>
- Kelly, P. E. & Larson, D. W. (1997). Effects of rock climbing on populations of pre-settlement eastern white cedar on cliffs of the Niagara. *Conservation Biology*, 11 (5), 1125-1132.
- Larson, D. W. (1990). Effects of disturbance on old-growth Thuja Occidentalis at cliff edges. *Canadian Journal of Botany*, 68, 1147-1155.
- Malkin, D.R. (2000). *Effects of rock climbing on populations of Silene Seelyi, a rare perennial plant*. Master's thesis, University of Washington, Seattle.
- Maples, J. N. (2021). *Rock climbing in Kentucky's Red River Gorge: An oral history of community, resources, and Tourism*. West Virginia University Press.

- Maples, J.N., Bradley, M.J., Clark, B. Giles, S., & Leebrick, R. (2022). Leave No Person Behind: Examining Inclusivity Programming and Environmental Impact among Rock Climbers. *Journal of Outdoor and Environmental Education*. <https://doi.org/10.1007/s42322-022-00106-0>
- Monongahela National Forest. (1996). Environmental assessment: An analysis of commercial guided rock climbing at Seneca Rocks, West Virginia. United States Department of Agriculture Forest Service. Potomac Ranger District, Petersburg, WV
- Miller, T., Borrie, W., & Harding, J. (2001). Basic knowledge of factors that limit the practice of low-impact behaviors. *Draft report on file at: US Department of Agriculture, Forest Service, Rocky Mountain Research Station, Aldo Leopold Wilderness Research Institute, Missoula, MT: University of Montana.*
- Monz, C. A., Cole, D. N., Johnson, L. A., & Spildie, D. R. (1994). Vegetation response to trampling in five native plant communities in the Wind River Range, Wyoming. *Bulletin, Ecological Society of America*, 75, 158.
- Nuzzo, V. A. (1995). Effects of rock climbing on cliff goldenrod (*Solidago Sciaphila Steele*) in Northwest Illinois. *The American Midland Naturalist*, 133 (2), 229- 241.
- Parikesit, P., Larson, D. W. & Matthes-Sears, U. (1995). Impact of trails on cliff edge forest structure. *Canadian Journal of Botany*, 73, 943-953.
- Roggenbuck, J. W. (1992). Use of persuasion to reduce resource impacts and visitor conflicts. In M. Manfredo (Ed.), *Influencing human behavior: Theory and applications in recreation, tourism and natural resources management*. Champaign, IL: Sagamore.
- Roper, S. (1994). *Camp 4: Recollections of a Yosemite Rockclimber*. Mountaineer Books.
- Ross, C. (2021). Leave No Trace Education: A Case Study on the Educational Methods Utilized by the Leave No Trace Center for Outdoor Ethics. Thesis, California Polytechnic State University.
- Salesa, D. & Cerdà, A. (2020). Soil erosion on mountain trails as a consequence of recreational activities. A comprehensive review of the scientific literature. *Journal of Environmental Management*, 271. <https://www.sciencedirect.com/science/article/pii/S030147972030918X>
- Schwartz, F., Taff, B.D., Pettebone, D., & Lawhon, B. (2016). Boulderers' attitudes and perceptions of Leave No Trace in Rocky Mountain National Park. *International Journal of Wilderness* 22(3), 25-32.
- Schwartz, F., B. D. Taff, B. Lawhon, D. Pettebone, S. Esser, and A. D'Antonio. 2019. "Leave No Trace Bouldering Ethics: Transitioning from the Gym to the Crag." *Journal of Outdoor Recreation and Tourism* 25, 16–23.
- Schaefer, B. M. (2021). Rock Climbing on the Niagara Escarpment: Emerging Entanglements of Care at the Crag. Thesis, University of Guelph.
- Sharp, R., Maples, J.N. & Gerlaugh, K. (2020). Factors influencing knowledge and self-reported application of Leave No Trace principles amongst rock climbers in Kentucky's Red River Gorge. *Journal of Adventure Education and Outdoor Learning* 20(1), 1-14.
- Siderelis, C. & Attarian, A. (2004) Trip Response Modeling of Rock Climbers' Reactions to Proposed Regulations. *Journal of Leisure Research*, 36(1), 73-88

- Spear, P. W., & M. J. Schiffman. (1979). Rock climbing and endangered plants: a case study, *Proceedings of the specialty conference (national Conference on Recreation Planning and Development, 2*, 630-636.
- Steelhammer, R. (2000, October 27). At the end of their rope: Success of New River Gorge rock climbing brings overcrowding. *Charleston Gazette*.
- Stephens, C. (2017). *Logan Canyon climbing management plan for the Uinta-Wasatch-Cache National Forest, Logan Ranger District*. Thesis, Utah State University
- Taylor, J. E. III. (2010). *Pilgrims of the Vertical: Yosemite rock climbers and nature at risk*. Harvard Press: Cambridge, MA.
- Thompson, J, Davidson, J. & Hutson, G. (2008). A case study on environmental perspectives of boulderers and access issues at the Niagara Glen Nature Reserve. *Australian Journal of Outdoor Education, 12*(2), 24-31.
- Thompson, J. R. (2009). *Climbers' perceptions toward sustainable bouldering at the Niagara Glen Nature Reserve*. Thesis, Brock University.
- Vagias, W. M., Powell, R.B., Moore, D.D. & Wright, B.A. (2012). Development, psychometric qualities, and cross-validation of the Leave No Trace Attitudinal Inventory and measure (LNT AIM). *Journal of Leisure Research, 44*(2), 234-256.
- White, D. (1999). Potential energetic effects of mountain climbers on foraging grizzly bears. *Wildlife Society Bulletin, 27*(1), 146-151.
- Wu, C., Li, C. & Wang, W. (2021). Low-impact hiking in natural areas: A study of nature park hikers' negative impacts and on-site leave-no-trace educational program in Taiwan. *Environmental Impact Assessment Review, 87*. <https://doi.org/10.1016/j.eiar.2020.106544>.

**(Peer Reviewed Abstract)****True Play, Movement, and Reflection: Equitable Access to a Mobile Pop-Up Program Facilitating Play and Movement for Diverse Populations**

*Kimberly Vigil, Murray State University*

*Kelly Rogers, Murray State University*

**Abstract**

In today's society, children have been exposed to Nature Deficit Disorder (Louv, 2005) for a number of years. Kids spend most of their days inside, often on screens. Their minimal outdoor time, usually recess, is scripted, and children are left without the autonomy to engage in self-directed play. There are countless barriers to outdoor, open-ended and self-directed play. The True Play, Movement, and Reflection mobile pop-up program is designed to break down barriers to outdoor, open-ended, true play, movement, and reflection, thus allowing diverse populations to have equitable opportunities to grow and develop.

The purpose of this program, True Play, Movement, and Reflection is to provide diverse populations of children with equitable opportunities to engage with nature, in green spaces within our community, using open-ended materials, where they direct the play. The American Academy of Pediatrics encourages play in that play is the means by which children make sense of themselves, others, and their world. Self-directed play promotes creativity, problem solving, appropriate risk taking, and cognitive, physical, and emotional development. Additionally, because this type of active, outdoor play can potentially improve attention (i.e. executive function), it may be a key tool in promoting school-readiness, particularly in boys and low socioeconomic status children (Lundy & Trawick-Smith, 2020).

Benefits of this program are numerous, including improvements in equitable access to nature and local green spaces, active, open-ended and true play, experiential learning, reflection opportunities fostering oral and written language development, and improved opportunities to develop interpersonal skills via screen-free social engagement. Moreover, the community partnerships that are developed through this program are sustainable, and can accommodate additional partners as the program continues (i.e. before and after school programs, summer lunch programs, etc.). The primary goal of the True Play, Movement, and Reflection program, then, is to provide these equitable access opportunities for the greatest number of diverse children and families in and around Murray. As children engage and participate in the program, data will be collected to determine the program's outreach, including the number of families that return to the program, and the demographics of the children served. These data will further drive programming, and possible partnerships for the program, again, with the primary outcome being to reach as many children and families as possible.

*Key words: Open-ended play, nature play, green spaces, play equity, reflection, risky play*

