

The Economic Benefits of ICON Access Points



radbridge



Foreword by Brian Trusty, PROS Consulting

Access to the great outdoors, getting outside, and the opportunity to be active in nature has become one of the treasured aspects of quality of life in our communities over the last decade. Particularly since the rigors of the COVID pandemic, demands placed on our trail systems and open spaces have exploded as many of us have either discovered for the first time or rediscovered the value and benefits of spending time outside. We enjoy these times either individually on our own, or with our friends and loved ones.

ICON Water Trails is the most ambitious regional trails initiative we have seen in the United States in a very long time. With over 80 river/water amenities and improvements along hundreds of miles of waterways in central Iowa, impacting dozens of communities and neighborhoods, the ICON Water Trail system will connect the region in such a unique way and be the gateway to so many great personal and collective experiences in the outdoors. As a professional planner in the parks and recreation industry that works across the country, I am inspired by both the reach and the thoughtfulness of the ICON Water Trails vision and what they have accomplished so far. In fact, I share what is happening here in central Iowa in communities across the country all the time.

There are many benefits to a regional trail system like this that is both intentionally connected and singularly branded. These benefits range from the tangible to the intangible; from economic outputs to community health and environmental services. It is also directly linked to how these sites are unified as system under consistent design, maintenance and operational standards. This study takes an in-depth look at the existing ICON sites, as well as future envisioned sites, and provides a defensible, data-driven approach to assessing to the total community impact of the water trails system for central Iowa. The results are impressive and drive home the importance of ICON Water Trails being a concerted and coordinated effort, as that is the secret to optimizing impact.

I hope you enjoy reading this report and reviewing its findings, but most importantly I hope you have the opportunity to get out and enjoy what nature has to offer at one of many ICON Water Trail sites in the region.

Brian Trusty
Principal,
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Executive Summary

Central Iowa's waterway access points, under the stewardship of Iowa Confluence (ICON) Water Trails, are pivotal in driving regional economic growth and community enrichment. These sites not only serve as recreational spaces but also act as economic drivers for local businesses. In line with the Iowa Statewide Comprehensive Outdoor Recreation Plan (SCORP), nearly 87% of Iowans have identified increasing access for natural water-based recreation as a high or medium priority, emphasizing the significance Iowans place on such places.¹ Of significant note, there is a subset of Iowa's population, 10% statewide, who do not know where to find local recreation opportunities. These individuals, if presented with accessible information and opportunities, are potential contributors to the outdoor recreation economy.

This analysis reveals how ICON's access points bolster the regional economy, defined as Polk County, through direct consumer spending, job creation, and tax contributions. Furthermore, this analysis estimates the public health benefits associated with these sites, measured through reductions in community healthcare costs, and the consumer surplus with river recreation, which quantifies the extra value that both local and non-local visitors derive from their experiences beyond their spending. Together, these analyses underscore the broad economic value of the ICON sites beyond the direct economic impacts. This information can be useful to parks and open space managers as they allocate budgets and design future park developments.

As Central Iowa works toward becoming a well-known destination for outdoor recreation, it is important to recognize and harness the potential of its water trails. The diverse range of water trails across Central Iowa offers a diversity of experiences, from serene paddling routes on Beaver Creek to bustling recreational activities along the Des Moines River. Each site, while part of the broader hydrological network, possesses unique characteristics that distinguish it from its counterparts. These distinctions not only cater to a wide spectrum of recreational enthusiasts but also attract non-local visitors, enhancing the region's economic vitality by injecting new money into the local economy and supporting jobs and local tax revenue.

Looking ahead, ICON envisions a future where these access points are seamlessly integrated with other regional recreational assets, creating a comprehensive network of interconnected trails, parks, and waterways. In this way, the access points of Central Iowa represent more than just points of entry to waterways; they are gateways to economic growth, environmental conservation, and community cohesion.

Methodology and Data Analytics

Given the limited availability of observed visitation data for the access points, a statistical model was developed and applied that combined observed data with mobile location data as well as other variables. First, observed visitation was sourced, when available, from agencies that manage access points and provided a foundation for estimating visitor counts. To enhance this data and fill in gaps, anonymized mobile location data

was procured and culled. When prepared and analyzed correctly, mobile location data can complement traditional, observed data, while also providing new insights. Other variables, including weather patterns, air quality indices, demographic data, mobile network coverage, and park descriptive data were also collected and processed. Utilizing a machine learning process, specifically a Random Forest regression model, these diverse datasets were synthesized to discern patterns and estimate visitation across the Study Area. The model was particularly useful in generating estimates of use for sites without observed visitation.

Key Findings

- 1. Visitation:** Recreational visits to ICON access points numbered 252,000. Non-local visitors accounted for approximately 31% of these visits.
- 2. Visitor Spending:** The economic footprint of these visitors is noteworthy. Sectors including hotels, restaurants, and retail saw consumer spending north of \$11 million. Given the non-locals' increased spending patterns, they accounted for more than 61% of total expenditures, a figure disproportionately higher than the non-locals' share of visitation due to their higher average expenditures per trip.
- 3. Employment:** Direct consumer spending supported 112 jobs and nearly \$3.4 million in wages.
- 4. Tax Revenue:** The spending contributed nearly \$1.3 million in taxes, bolstering county and state balance sheets.
- 5. Consumer Surplus:** The access points generate non-market benefits of at \$12.7 million in 2022, as measured through consumer surplus, which represents the value that visitors derive over and above their direct spending.
- 6. Health Benefits:** Recreational activities at the waterways contribute to improved physical and mental well-being, resulting in estimated reductions in healthcare costs of \$16.7 million for the community.

Key Takeaways and Recommendations

- 1. Economic Significance:** The stunning and diverse waterways in Central Iowa draw a significant number of visitors each year. This influx of visitors not only introduces new money into the economy, but also bolsters employment opportunities and supplements local tax revenue. Every dollar invested in ICON's access points helps to stimulate the local economy and supports the region's economic resilience.
- 2. Value to Recreationists:** Beyond the spending impacts, ICON access points provide immense intangible value to recreationists, captured as consumer surplus. This measure quantifies the extra value that both locals and non-locals derive from their experiences, over and above their spending. Such insights are useful in pricing strategies, demand elasticity, and benefit-cost analyses. These insights ensure that user values guide policy decisions.
- 3. Sustainability and Conservation:** The recreational value of the ICON access points is closely linked to the ecological health of the region, which means

it is imperative to strike a balance between promoting tourism and ensuring a sustainable level of use. Strategic investments in both the maintenance of existing lands and the expansion of recreational opportunities can help to ensure the long-term flow of economic and recreational benefits within Central Iowa.

Limitations

- 1. Mobile Location Data:** Mobile location data utilized in this analysis has certain limitations, including its breadth, depth, and geospatial accuracy.
- 2. Model and Training Data:** The Random Forest model requires a lot of training data to work best. The limited availability of visitation data is one constraint that can impact model accuracy.
- 3. Period of Analysis:** The analysis is based on data from April 1, 2022 to October 31, 2022; a year with below-average water flows. This period may not be representative of a typical year and does not allow for insights into year-over-year trends.

Report Structure

This report provides an assessment of outdoor recreation at ICON access points. The organization of the report is as follows:

Introduction: The section presents the relevance of Central Iowa's recreational rivers, outlines the objectives of this analysis, and provides an overview of the Study Area.

Analysis 1 - Outdoor Recreation Visitation at ICON Access Points: This section describes how visitation to ICON access points was estimated using mobile location data and machine learning. Results included visitation by access site, visitor origin, and temporal trends.

Analysis 2 - Economic Analysis of Outdoor Recreation at ICON Access Points: This section estimates the direct economic impacts stemming from outdoor recreation activities at access points.

Analysis 3 - Potential Economic Impacts from Future ICON Access Points: This section estimates the potential economic impacts of planned ICON access points, estimating visitation and the associated economic contributions these sites could bring to the region.

Analysis 4 - Non-market Benefits of Outdoor Recreation: The analysis evaluates some of the non-market benefits of ICON access points, specifically health and consumer surplus benefits.

Conclusion: This section synthesizes the findings from the analyses and discusses their implications for ICON's existing and planned access points.

Appendix A - Methodology for Developing Expenditure Profiles: This section details the methodology employed to develop the spending profiles used in the study.

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Introduction

The section presents the relevance of Central Iowa's recreational rivers, outlines the objectives of this analysis, and provides an overview of the Study Area.

ICON Water Trails is a 501(c)(3) organization responsible for the development and promotion of a comprehensive water recreation network that covers 150 miles of creeks and rivers in Central Iowa. Established in response to the Greater Des Moines Water Trails and Greenways Master Plan of 2016, ICON's primary objective is to reconnect the local population with the region's river roots.² The organization's mission is grounded in three foundational principles: the integration of regional culture, the conservation of environmental resources, and the promotion of recreational activities. Through collaborative partnerships, ICON seeks to expand recreational access, improve water quality, bolster local economic growth, and preserve Central Iowa's natural ecosystems. In its ongoing efforts, ICON remains steadfast in its commitment to the sustainable stewardship of waterways for the well-being of both the current population and future generations.

The primary objective of this analysis is to provide a comprehensive assessment of the current use and potential economic impact of ICON's access points within Polk County (the "Study Area"). This includes:

- **Recreational Visitation:** Estimate the volume and nature of visitation to ICON access points, including visitor origins.
- **Economic Contribution and Impact Analysis:** Evaluate the direct economic impacts stemming from recreation-related activities and consumer expenditures made in communities by visitors to these sites.
- **Economic Potential of Planned Access Points:** Estimate the potential economic benefits of sites that are currently in the planning phase, thereby providing insights into future economic contributions and the "return-on-investment" these sites can provide.
- **Non-Market Benefits:** Estimate the consumer surplus and the health benefits accrued due to recreational activities.

The goal of this analysis is to provide ICON with data-driven insights that can inform decision-making, guide resource allocation, and highlight the value of these access points to the community and region, defined as Polk County.

Overview of Access Points the Study Area

The waterways of ICON offer a wide spectrum of ecosystems, recreational opportunities, and culture. Each river or creek, while part of the larger hydrological network of Central Iowa, possesses unique characteristics that distinguish it from its counterparts. The river reaches and access points included in this analysis are as follows:

Beaver Creek (2 active & 1 planned site): This reach features sites in Johnston and Lew Clarkson Park. These sites offer cast-in-place launches, paved trails, and infrastructure for various water activities. Adjacent amenities include soft trails and stairs for creek access.

Des Moines River (6 active & 4 planned sites): This reach encompasses sites from the Cottonwood Recreation Area to the Red Rocks Wildlife Management Area. These sites provide a mix of boating amenities, trail networks, campgrounds, public hunting access, and planned enhancements in line with local master plans.

Fourmile Creek (2 active & 2 planned sites): This reach includes sites in Mally's Weh-Weh-Neh-Kee Park and Sargent Park, which are adjacent to trail access, natural playscapes, and connections to other regional trails.

Raccoon River (2 active & 1 planned site): This reach includes sites in Raccoon River Park and Walnut Woods State Park, which are adjacent to amenities like paddling access, extensive trail networks, fishing piers, swimming beaches, and nature lodges.

Chichaqua Bottoms & Skunk River (2 active sites): Primarily located in the Chichaqua Bottoms Greenbelt, these sites are adjacent to extensive trail networks, hunting, fishing, and camping opportunities.

Middle River (2 planned sites): Consisting of sites within the Banner Lakes at Summerset State Park and Banner Flats Wildlife Management Area, this reach features public hunting lands, and trails.

Mud Creek (1 active & 1 planned site): Adjacent to Bondurant's Eagle Park, the sites in this reach are set for enhancements such as trail connections, creek-side benches, and various environmental and recreational amenities.

North River (2 planned sites): This reach includes sites situated within Scotch Ridge Nature Park and Carlisle City Park, offering connections to regional trails, park amenities, and planned water access improvements, catering to paddlers, park visitors, anglers, and trail users.

Walnut Creek (4 planned sites): This reach includes planned expansion to areas like Urbandale's Walker Johnston Park, featuring amenities like trails, playgrounds, sports fields, community centers, and more.



ICON Access Points

Beaver Creek

Active Sites

- Site 23: 70th & 86th
- Site 30: Low Clarkson

Planned Sites

- Site 36: Merle Hay Gateway

Des Moines River

Active Sites

- Site 21: Cottonwood Recreation Area
- Site 26: Sycamore Access
- Site 48: Prospect Park
- Site 51: Birdland Marina
- Site 87: Yellow Banks
- Site 106: Red Rocks Wildlife Management Area

Planned Sites

- Site 4: Jester Park
- Site 10: Polk City Sports Complex
- Site 46: Euclid Avenue
- Site 64: Harriet Street

Fourmile Creek

Active Sites

- Site 29: Mally's Weh-Weh-Neh-Kee Park
- Site 43: Sargent Park

Planned Sites

- Site 50: Fourmile Creek Community Center
- Site 75: Fourmile Creek and the Des Moines River

Raccoon River

Active Sites

- Site 88: Raccoon River Park
- Site 91: Walnut Woods State Park

Planned Sites

- Site 79: Brown's Woods Forest Preserve

Chichaqua Bottoms & Skunk River

Active Sites

- Site 5: Chichaqua Bottoms Camping Area
- Site 7: Chichaqua Bottoms Greenbelt

Planned Sites

Currently no planned sites

Middle River

Active Sites

Currently no active sites

Planned Sites

- Site 112: Banner Flats Wildlife Management Area
- Site 117: Banner Lakes at Summerset State Park

Mud Creek

Active Sites

- Site 17: Eagle Park

Planned Sites

- Site 28: City of Altoona's Greenway Trail

North River

Active Sites

Currently no active sites

Planned Sites

- Site 102: Carlisle City Park
- Site 103: Scotch Ridge Nature Park

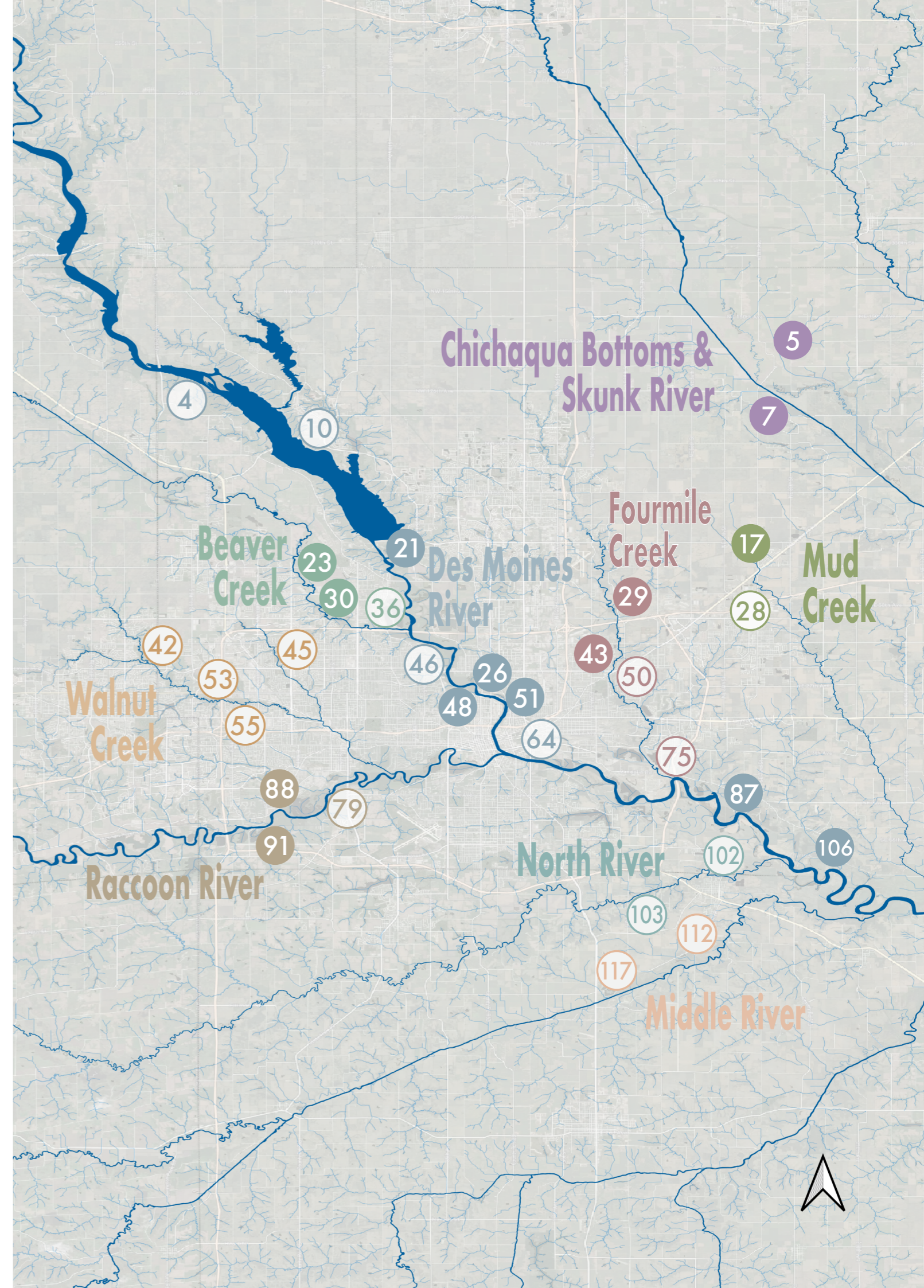
Walnut Creek

Active Sites

Currently no active sites

Planned Sites

- Site 42: Walnut Creek Regional Park
- Site 45: Walker Johnston Park
- Site 53: Clive Aquatic Center
- Site 55: Clive Greenbelt



Analysis 1

Outdoor Recreation Visitation at ICON Access Points

This section describes how visitation to ICON access points was estimated using mobile location data and machine learning. Results included visitation by access site, visitor origin, and temporal trends.

Methods

Observed visitation data for ICON access points is limited for a variety of reasons, including the high costs associated with traditional visitor counting methods. Therefore, this study used a combination of methods and data sources to fill in the gaps and produce comprehensive estimates of outdoor recreation visitation to ICON Water Trails access points. Specifically, a machine learning model was employed that combined mobile location data with observed data and contextual data. Properly curated and analyzed mobile location data can provide rich insights into visitor counts, their origins, and other visitation attributes. The methodology also distinguishes between four categories of user types:

- 1. Local River User:** Individuals who engage in river-based activities who live within 10 miles of the Access Site.
- 2. Local Splash-and-Play:** Individuals who engage in shore-based recreational activities at the access site who live within 10 miles of the Access Site.
- 3. Non-local River User:** Individuals who engage in river-based activities and live more than 10 miles away from the Access Site.
- 4. Non-local Splash-and-Play:** Individuals who engage in shore-based recreational activities at the access site and live more than 10 miles away from the Access Site.

The choice of defining “local” as living within 10 miles of an access point is influenced by the primary study from which the expenditure profiles were derived. This study followed a similar approach in defining local and non-local visitors. While this definition may not strictly identify new money entering Polk County as a whole, it effectively captures the influx of new money into individual municipalities, even if it originates from neighboring municipalities.



Data Collection and Preparation

1. **Mobile Location Data:** The foundational dataset for this analysis was procured from the data vendor Near Intelligence. It comprised 2.6 billion mobile location “pings” recorded by devices in the Study Area from April 1st to October 31st, 2022. Each ping signifies a specific location and time signal from distinct mobile devices. The analysis was narrowed down to the recreational lands within ICON’s jurisdiction, with the dataset limited to pings within the boundaries of the access points and adjacent rivers. A meticulous cleaning process followed, which involved removing duplicate pings from the same devices, and excluding singular pings and pings possibly linked to employees or locals within the site boundaries. From the initial 2.6 billion pings, the dataset was refined to a sample of 1.5 million relevant pings, representing visitors to ICON’s access points. It is crucial to note that the analysis utilized aggregated and anonymized mobile location data for privacy and security, ensuring individual devices or visitors remain unidentifiable.
2. The cleaned mobile location data was also used to develop visitor characteristics, such as delineating between local and non-local visitors, and whether the device was a river visitor or a Splash-and-Play visitor.
3. **Observed Visitation Data:** Observed visitation data from access points were integrated with available records. Data was obtained from the City of West Des Moines, Iowa Department of Natural Resources, and Army Corps of Engineers. While other sources of data were available, they were not incorporated into the primary model due to ambiguous data collection methodologies and inconsistent coverage.
4. **Contextual Data:** Additionally, contextual data for all access points in the Study Area were gathered. This included weather data sourced from the nearest meteorological stations (with larger areas utilizing a weighted average from several stations), PM2.5 measurements representing air quality, population data, and access site size.^{3,4,5,6} Initially, mobile location LTE coverage was also included as a variable, however, due to the presence of LTE coverage at all access points, this variable was not found to be significant and was subsequently omitted from the analysis.

Visitation Model Development

The Random Forest model operates by utilizing numerous decision trees. Each tree applies a set of rules derived from the data to make predictions about visitation numbers, and the model aggregates these individual predictions to produce a more reliable final estimate. This model was chosen for its ability to handle large volumes of data and identify intricate, non-linear relationships within the data.⁷

With this methodology, various datasets were integrated to ‘train’ the model, allowing correlations between different variables, such as the influence of weather conditions on visitation numbers, to be recognized and understood by the model. Visitation patterns across ICON’s access points, where direct observational data were absent, were then estimated by the Random Forest model.

The analysis was conducted using a statistical analysis and data visualization tool called “R”, which ensures a structured approach in data processing and evaluation.⁸ It is important to note that the accuracy of the model is dependent on the quality of the input data; as the comprehensiveness and precision of the data are improved, enhancements in the model’s predictive capabilities and the robustness of the estimates are observed.

It should also be reiterated that the design of the model focuses on identifying correlations and patterns, not causations. The utilization of the model’s outputs is aimed primarily at acquiring clearer insights into the outdoor recreation use of ICON access points.



Results

The analysis estimates that existing ICON access points saw approximately 252,000 visits between April 1st and October 31st, 2022. River users constitute the majority of visitation, accounting for about 180,000 visits (~72% of total visitation). This segment of visitors primarily engages in activities directly related to the river, such as kayaking, fishing, and boating. Meanwhile, the remaining 72,000 visits (~28% of total visitation) were categorized as “Splash-and-Play” visits. It is important to note that this estimate is likely conservative, as the analysis was restricted to those who spent the majority of their time in the designated Splash-and-Play zones adjacent to the river shores. Splash-and-Play estimates do not include general park visitors who did not spend a majority of their visit near the water access site.

A more granular look at the data by access site number reveals variations in visitation across different locations. For instance, Access Site 51, Birdland Marina, appears to be a focal point of river recreation, registering a total of 92,000 visits. This substantial activity is likely influenced by its prime location in downtown Des Moines as well as the amenities offered at the site. Conversely, sites like Access Site 7 reported lower numbers, with an estimate of only 193 total visits. These disparities suggest a range

Table 1. Visitation to Existing ICON Access Points

Water Trail	Access Point Number	River Visits	Splash-and-Play Visits	Total Visits
Chichaqua Bottoms & Skunk River	5	1,704	5,018	6,722
Chichaqua Bottoms & Skunk River	7	145	48	193
Mud Creek	17	8,074	6,793	14,867
Des Moines River	21	18,275	1,884	20,159
Beaver Creek	23	2,989	608	3,597
Des Moines River	26	14,985	17,671	32,656
Fourmile Creek	29	2,329	773	3,102
Beaver Creek	30	2,786	924	3,710
Fourmile Creek	43	2,480	1,971	4,451
Des Moines River	48	3,438	2,893	6,331
Des Moines River	51	67,553	*24,351	91,904
Des Moines River	87	14,615	1,811	16,425
Raccoon River	88	20,275	3,878	24,152
Raccoon River	91	19,735	3,526	23,261
Des Moines River	106	257	85	342
Total Visits		179,639	72,234	251,873

of factors influencing visitation, such as accessibility, available amenities, and possibly even public awareness of the sites.

The analysis reveals that local visitors, defined as those who live in the Study Area and are within 10 miles of the Access Site, accounted for approximately 69% of visits, or 174,000 visits. These local visitors contribute significantly to the overall utilization of the ICON access points. A detailed breakdown by access site further illuminates these patterns. For instance, Access Site 51 stands out, drawing a substantial number of both local (58,231 visits) and non-local (33,673 visits) visitors, likely due to its wide range of amenities and strategic location in downtown Des Moines.

Table 1. Local and Non-local Visitation to Existing ICON Access Points

Water Trail	Access Point Number	Local	Non-Local
Chichaqua Bottoms & Skunk River	5	18%	82%
Chichaqua Bottoms & Skunk River	7	67%	33%
Mud Creek	17	63%	37%
Des Moines River	21	78%	22%
Beaver Creek	23	97%	3%
Des Moines River	26	90%	10%
Fourmile Creek	29	67%	33%
Beaver Creek	30	67%	33%
Fourmile Creek	43	69%	31%
Des Moines River	48	67%	33%
Des Moines River	51	63%	37%
Des Moines River	87	62%	38%
Raccoon River	88	72%	28%
Raccoon River	91	72%	28%
Des Moines River	106	67%	33%
All Visits		69%	31%

Certain sites such as Access Site 21, located at the Cottonwood Recreation Area, and Access Site 26, near the Neal Smith Trail, are predominantly frequented by local visitors, with 78% and 90% local visitation respectively. These access points, with high local-to-non-local visit ratio, suggest that they serve as recreational hubs for locals.

Non-local visitors accounted for the remaining 77,000 visits, making up 31% of the total visitation. Access Site 5, located in the Chichaqua Bottoms, had a high percentage of non-local visitors, with 82% of total visits. This is likely attributable to the site's relative remoteness and the fewer number of people living in the area, making it a more attractive destination for those seeking less crowded outdoor experiences. Access Site

87, contained within Polk County Conservation's Yellow Banks Park, also recorded a notable proportion of non-local visitors at 38%, suggesting it too has elements that attract visitors from further afield.

The variances in local and non-local visitation across sites offer insights for future site development, promotional activities, and policy formulation. Importantly, the distinction between local and non-local visitors also has economic implications. As these two groups have different spending habits, understanding their respective contributions to site usage sets the stage for understanding their economic impact, which is detailed in later sections of this report.



Analysis 2

Economic Impact Analysis of Outdoor Recreation at ICON Access Points

This section estimates the direct economic impacts stemming from outdoor recreation activities at access points.

Introduction

Economic impact analysis shows the ripple effects of specific activities, like outdoor recreation, on a region's economy. This analysis can be delineated into:

- **Economic Contributions:** This encompasses the total spending in the industry of interest (e.g., outdoor recreation), factoring in both local and non-local visitors. It provides an overview of how different visitor groups contribute to the industry's total spending.
- **Economic Impacts:** This narrows the focus to spending by non-local visitors alone, as this represents new money entering the economy. It's a measure of how an industry brings external financial inflow to a community or region, influencing various sectors.

In the context of this study, the industry of interest is the outdoor recreation economy, and the Study Area is Polk County. Evaluation of economic contributions and impacts can help to reveal a holistic view of the outdoor recreation industry's economic footprint, including aspects such as employment, wages, taxes, and its overall contribution to the region's economic output.

Methods

This analysis can be broken into five steps, each of which is further detailed in this section:

1. Define the Region of Analysis.
2. Develop Spending Profiles.
3. Calculate Total Consumer Spending by Industry.
4. Develop an Input-Output Model to Estimate Economic Contributions and Impacts.
5. Delineate Between Economic Contributions and Economic Impacts.

Step 1: Define the Region of Analysis

As discussed above, the analysis centers on access points within the ICON network, emphasizing the economies these sites are embedded within. The region of analysis for this study is defined as Polk County (also referred to as the Study Area).

Step 2: Develop Spending Profiles

Next, detailed expenditure profiles are created. These profiles delineate the average

expenditure patterns of visitors across different industry types (e.g., equipment, gas, food, lodging). Local and non-local visitors, defined in the previous section, have different expenditure profiles. Breaking out local and non-local spending behaviors provides a more nuanced understanding of visitor expenditure patterns across the ICON network. This approach also allows us to identify the new money injected into the local economy by non-local visitors.

Step 3: Calculate Total Consumer Spending by Industry

This step aggregates the total economic spending across various sectors. This is achieved multiplying the visitation results by the spending profiles for each visitor type (local or non-local), revealing the economic sectors most impacted by recreational activities within the ICON network.

Step 4: Develop an Input-Output Model to Estimate Economic Impacts

To capture the nuanced economic interactions and impacts stemming from recreation-related spending, an input-output (I-O) model is employed. The I-O model shows how spending in one industry can ripple through and influence other sectors within a regional economy. Multipliers, a key part of I-O models, estimate these cascading effects. They quantify how a single dollar can lead to additional economic outcomes within the regional economy.

Data from the Bureau of Economic Analysis, specifically the RIMS II I-O model, is utilized to estimate these economic impacts.⁹ The RIMS II model yields outputs such as economic output, GDP contributions, employment, and wages. However, as tax multipliers aren't encompassed in the BEA RIMS II data, they are computed separately. To gauge the fiscal impact of visitor spending, the appropriate tax rates for different industries are identified and applied.¹⁰

Step 5: Delineate Between Economic Contributions and Economic Impacts

In the final stage, the total spending by local and non-local visitors is estimated. Economic contributions encompass spending by both local and non-local visitors, serving as a measure of the outdoor recreation industry's presence and influence within the local economy. Conversely, the spending by non-local visitors represents the actual economic impact, as it introduces new money into the local economy.¹¹ This process highlights the dual role of access points: they both reinforce local economic activity and attract new economic resources from outside visitors.

Illustrative Story on Economic Impacts

Sarah decides to spend her Saturday morning kayaking on the Des Moines River, launching from one of ICON's access points. To gear up for her adventure, she stops by a local outdoor equipment store to buy a new life vest. While there, she discovers some t-shirts that are locally manufactured using sustainable materials from the region. On her way to the water access site, she fuels up her car, thereby supporting a local gas station.

After kayaking, Sarah's appetite leads her to a nearby café where she enjoys a hearty meal. She also treats herself to a dessert from a popular local bakery, renowned for using ingredients sourced from nearby farms. Sarah's activities throughout the day create ripples in the local economy. From the equipment store attendant to the café staff, her expenditures benefit numerous local jobs and businesses. Moreover, the bakery's procurement of local ingredients and the clothing manufacturer's reliance on regional materials exemplify the cascading effects of Sarah's spending in other segments of the local economy. Each of Sarah's transactions not only bolsters the local businesses and their suppliers but also contributes to local tax revenue, which in turn funds community infrastructure and services.



Results

The analysis yielded three types of outputs, which are summarized below: spending profiles, total industry spending, and economic impacts.

Spending Profiles

Understanding the spending habits of visitors, or their ‘spending profiles,’ is fundamental for computing the economic impacts associated with river recreation. Spending profiles delineate how distinct visitor groups – in this case “local” and “non-local” users – allocate their trip expenditures across categories like food, transportation, and entertainment. For this analysis, a spending profile was created tailored to the ICON access points, drawing upon relevant external studies. More details are provided in Appendix A.

Two distinct spending profiles were developed for ICON access points, one for “local users” and one for “non-local users”, summarized in Table 3 below.

Table 3. Local and Non-local Spending Profiles of ICON Access Point Visitor

Expenditure Category	ICON Access Points, Local Users (2022 USD)	ICON Access Points, Non-local Users (2022 USD)
Restaurant meals	\$9.31	\$32.50
Transportation	\$2.97	\$10.38
Retail	\$3.76	\$13.11
Grocery	\$5.20	\$18.16
Recreation Spending (access fees, rentals, etc.)	\$2.11	\$7.37
Entertainment	\$0.68	\$2.38
Other	\$0.70	\$2.46
Total	\$24.74	\$86.36

This profile offers insight into the potential spending of visitors, both local and non-local, at ICON’s access points. As demonstrated in the following section, the calculation of total spending by industry, identifying the economic footprint of each sector within the region, can be derived by multiplying these expenditure profiles against visitation estimates.

Total Consumer Spending by Industry

Using the above established spending profiles, the total spending by industry was calculated by multiplying them against visitation estimates. This resulted in a total of \$11 million in consumer spending associated with recreation at ICON’s existing access points.

As detailed in Table 4, locals contributed \$4.3 million to this amount, with restaurant meals making up roughly 38% of their total spending, and groceries representing around 21%, suggesting the access points help to support local food businesses.

Non-local visitors contributed \$6.7 million to the total spending. Their expenditures

were more evenly distributed across multiple sectors, including restaurant meals (38%), groceries (21%), retail (15%), and transportation (12%).

The industry-level spending data highlights the multi-faceted economic footprint of ICON’s access points. For locals, the concentration of spending in the food sector shows the relationship between outdoor recreation and local businesses. On the non-local side, the wider range of spending across multiple industries signifies a broader engagement with the local economy, likely indicative of longer stays and greater utilization of the amenities offered near the access points. Understanding these spending habits provides a nuanced view of the economic interplay between different visitor groups, the access points, and the local economy.

Table 4. Visitor Spending by Industry

Industry	Local	Non-local	Total Spending
Entertainment	\$119,000	\$185,000	\$304,000
Grocery	\$911,000	\$1,413,000	\$2,324,000
Other	\$123,000	\$191,000	\$314,000
Recreation Spending (access fees, rentals, etc.)	\$370,000	\$574,000	\$943,000
Restaurant meals	\$1,631,000	\$2,529,000	\$4,160,000
Retail	\$659,000	\$1,020,000	\$1,679,000
Transportation	\$520,000	\$808,000	\$1,328,000
Total	\$4,333,000	\$6,720,000	\$11,053,000

Economic Contributions and Impact of Visitor Spending

The economic influence of outdoor recreation at ICON’s access points in the Study Area extends across various sectors, including entertainment, restaurant meals, retail, and transportation. Each sector has an associated multiplier used to gauge its ripple effects on the economy. As shown in Table 5, the \$11 million in spending by local and non-local visitors subsequently generated an overall economic output of \$19.6 million. The term “economic output” refers to the total value of transactions triggered by the initial spending. Furthermore, the spending supported 112 jobs and \$3.4 million in earnings. In terms of taxation, the activities by access site visitors generated a combined tax revenue of over \$1.3 million for state and county governments.

Table 5. Economic Impacts by Visitor Type

Visitor Type	Spending	Economic Output	Employment	Wages	State and County Tax
Local	\$4,333,000	\$7,664,000	44	\$1,321,000	\$492,000
Non-local	\$6,720,000	\$11,888,000	68	\$2,049,000	\$764,000
Total	\$11,053,000	\$19,553,000	112	\$3,369,000	\$1,256,000

The results also underscore the substantial role non-locals play in the economic vitality of the region, both in terms of outdoor recreation visitation and fiscal contributions. As shown in the table, non-local visitors were responsible for \$6.7 million in direct spending within the Study Area's local economies, which led to an economic output of \$11.9 million. Further, this spending supported 68 jobs and resulted in earnings of \$2 million. Finally, non-locals contributed to state and local tax revenues of \$764,000.

ICON's access points serve dual roles as recreational hubs and significant economic engines for the Study Area. They have extensive economic and fiscal implications, especially from the activities of non-local visitors. These findings are instrumental for policy formulation, resource allocation, and long-term strategic planning aimed at sustainable outdoor recreation in the region. Implications include:

- 1. Economic Significance:** The recreation sector proves to be a key component of the Study Area's overall economy, supporting employment and taxes.
- 2. New Money Impact:** Non-local spending injects fresh dollars into the local economy, driving economic growth, and diversifying revenue sources, which is essential for economic resilience.
- 3. Importance of Water Quality and Supply:** Water quality is a crucial factor that influences both the ecological health and the economic potential of the access points. Poor water quality could deter visitors, thereby affecting the economic contributions from this sector. Additionally, adequate water supply is fundamental for the long-term viability of these recreational sites, affecting not just the visitor experience but also the broader ecosystem.
- 4. Importance of Funding:** The significant economic contributions of these sites provide an economic case for continued – or new – investments in the access points and supporting amenities like parks, given the value they generate. Every dollar invested in ICON's access points not only contributes to the quality of recreational experiences, it's also an investment with concrete returns, stimulating the local economy and strengthening the regional economy.

Analysis 3

Potential Economic Impacts of Planned ICON Access Points

This section estimates the potential economic impacts of planned ICON access points, estimating visitation and the associated economic contributions these sites could bring to the region.

Introduction

Central Iowa's waterways are focal points for outdoor recreation. ICON's access points enhance this appeal, deepening the overall recreational experience. Their economic benefits have been described and quantified in prior sections, but there remains untapped potential.

Several access points in Central Iowa, not yet affiliated with the ICON network, stand to gain from ICON's increased visibility and resources. The Statewide Comprehensive Outdoor Recreation Plan (SCORP) underscores the significance of these sites, noting that 87% of Iowans prioritize enhancing access to water-based recreation. Despite this, a knowledge gap persists: many local and non-local visitors remain unaware of available recreational sites for river recreation. The SCORP further specifies recreational preferences, with 29% of respondents indicating interests like canoeing, kayaking, or tubing, and 40% emphasizing fishing. A notable 14% pinpoint a deficit in recreational amenities, especially for canoeing and kayaking.

Joining the ICON network equips jurisdictions with tools to address these gaps. Association with a well-established brand like ICON often translates to heightened trust and appeal among potential visitors. Such recognition, bolstered by ICON's marketing and promotional strategies, holds the potential to raise a site's prominence and attract a greater number of visitors.

This segment will detail the current visitation trends at prospective ICON sites and their consequent economic footprints. Beginning with current usage estimates and projecting a 10% visitation increase following integration with the ICON network, this analysis will forecast the additional economic benefits these sites could bring to Central Iowa.

Current Economic Benefits of Planned Access Points

To assess the benefits of incorporating additional access points into the ICON network, a methodology consistent with the analysis of existing ICON sites was employed. Mobile data was combined with site-specific variables, and a Random Forest regression model was used to estimate visitation. The aim was to estimate the utilization of access points that hold potential for future ICON integration. As in the prior analysis, the results have been categorized into 'River users' and 'Splash-and-Play' users. Table 6 presents a breakdown of visitation numbers.



The data suggests that these planned sites, despite not being affiliated with ICON, still draw substantial public use with 139,000 visits. On average, each of the 18 sites saw 7,718 visits. This figure stands in contrast to the 16,792 average visits for ICON-branded sites. Besides ICON branding, this difference is likely attributable to various factors, including local population and demand, and that ICON may have initially onboarded some of the sites that already had higher visitation numbers.

Table 6. Current Use of Planned Access Points

Water Trail	Access Point Number	River Visits	Splash-and-Play Visits	Total Visits
Des Moines River	4	4,509	942	5,451
Des Moines River	10	13,202	4,152	17,354
Mud Creek	28	430	143	573
Beaver Creek	36	12,398	3,852	16,250
Walnut Creek	42	8,859	2,674	11,533
Walnut Creek	45	7,837	1,815	9,652
Des Moines River	46	5,921	1,463	7,385
Fourmile Creek	50	6,536	1,716	8,252
Walnut Creek	53	425	141	567
Walnut Creek	55	3,954	1,201	5,154
Walnut Creek	57	9,834	3,046	12,880
Des Moines River	64	8,919	2,580	11,499
Fourmile Creek	75	256	85	341
Raccoon River	79	7,106	2,231	9,337
Raccoon River	95	2,255	535	2,790
North River	102	2,974	867	3,841
North River	103	824	273	1,097
Middle River	117	11,921	3,054	14,975
Total Visits		108,161	30,771	138,932

Of note, on average, 67% of visitors are from local areas, underscoring the important role these sites play in their immediate communities. The balance, 33%, represent non-local visitors, indicating the wider appeal of these sites. For comparison, ICON-branded sites report 70% local visits. However, this disparity could be influenced by similar factors that influence the visitation estimates.

Table 7. Local and Non-local Use of Planned Access Points

Water Trail	Access Point Number	Local	Non-Local
Des Moines River	4	67%	33%
Des Moines River	10	92%	8%
Mud Creek	28	67%	33%
Beaver Creek	36	91%	9%
Walnut Creek	42	17%	83%
Walnut Creek	45	68%	32%
Des Moines River	46	77%	23%
Fourmile Creek	50	85%	15%
Walnut Creek	53	67%	33%
Walnut Creek	55	61%	39%
Walnut Creek	57	65%	35%
Des Moines River	64	90%	10%
Fourmile Creek	75	67%	33%
Raccoon River	79	65%	35%
Raccoon River	95	70%	30%
North River	102	51%	49%
North River	103	67%	33%
Middle River	117	21%	79%
All Access Points		67%	33%



Economic Contributions of Planned Access Points

Even without ICON branding, these sites already make significant contributions to their local economies. This highlights the potential to amplify economic outcomes with ICON affiliation. Recreational activities at these sites already attract thousands of visitors and generate direct spending across diverse sectors of the local economy, ranging from food and accommodation to equipment rentals and purchases. Utilizing the spending profiles and multipliers outlined in Analysis 2 yields the following economic statistics summarized in Tables 8 and 9.

Table 8. Visitor Spending by Industry for Planned Access Sites

Industry	Local	Non-local	Total Spending
Entertainment	\$62,000	\$110,000	\$172,000
Grocery	\$477,000	\$837,000	\$1,314,000
Other	\$64,000	\$113,000	\$178,000
Recreation Spending (access fees, rentals, etc.)	\$194,000	\$340,000	\$533,000
Restaurant meals	\$854,000	\$1,498,000	\$2,351,000
Retail	\$345,000	\$604,000	\$949,000
Transportation	\$272,000	\$478,000	\$751,000
Total	\$2,268,000	\$3,980,000	\$6,248,000

Table 9. Current Economic Contributions of Planned Access Points

Visitor Type	Spending	Economic Output	Employment	Wages	State and County Tax
Local	\$2,268,000	\$4,012,000	23	\$691,000	\$258,000
Non-local	\$3,980,000	\$7,040,000	40	\$1,213,000	\$452,000
Total	\$6,248,000	\$11,052,000	63	\$1,905,000	\$710,000

Potential for Non-ICON Sites to Join and Benefit from the ICON Network

Assuming that ICON affiliation could lead to a 10% increase in visitation, this translates to a projection of around 14,000 additional visits is made, which would generate an additional \$625,000 in direct spending. Accounting for the multiplier effect, the regional economy of Polk County could potentially experience a boost of approximately \$1.1 million, representing a conservative estimate of the potential value of ICON affiliation. Table 10 summarizes the projected economic effects of an additional 14,000 visits.

Given the already considerable economic footprint of these planned sites, ICON affiliation could augment these benefits substantially. Leveraging ICON's visibility and marketing capabilities, a 10% increase in visitation might notably enhance direct spending, output, and tax contributions. Further, the SCORP emphasizes a pronounced preference among lowans for more access to natural water-based recreation, suggesting the potential for even more expansive growth.

In essence, affiliating with ICON can unlock opportunities to elevate these sites' economic contributions, positioning them not merely as vital recreational hubs, but also as economic generators for the region.

Table 10. Economic benefits of broader ICON affiliation

Metric	Change (vs. existing conditions)
Direct Visitor Spending	+ \$625,000/year
Economic Output	+ \$1,100,000/year
Employment	+ 6.3 jobs
Earnings	+ \$190,000/year
Tax Contribution	+ \$71,000/year

Analysis 4

Non-market Benefit of Outdoor Recreation at ICON Access Points

The analysis evaluates some of the non-market benefits of ICON access points, specifically health and consumer surplus benefits.

The economic impact analysis and expenditure profiles described in the previous analysis provide a measure of the dollar amount that people spend on recreation-related activities within the watershed. However, the economic value that people derive from this recreation is even higher than what they spend. This section highlights and quantifies how outdoor recreation contributes to the well-being of individuals and the broader community. Non-market benefits captured here include consumer surplus and health benefits that people realize as a result of engaging in recreation at the ICON sites.

Consumer Surplus

Consumer surplus serves as a key economic metric to assess non-market benefits of outdoor recreation, representing the value that visitors derive from an economic good or service, over and above what they actually paid for it. In the context of outdoor recreation, it provides a measure of the intangible value individuals ascribe to their recreational experiences beyond monetary expenditures. This analysis focuses on quantifying the consumer surplus generated by the ICON Water Trails access points. To achieve this, the Travel Cost Method (TCM) is employed.

The TCM is a technique used to estimate the non-market value of recreation by evaluating the implicit costs visitors incur, such as travel expenses and the opportunity cost of time.¹² It assesses the total resources expended by individuals to visit an outdoor recreation site, reflecting the intrinsic value they place on the experience. Thus, TCM provides a strong estimate of the perceived value of a recreational amenity, beyond direct financial expenditures.

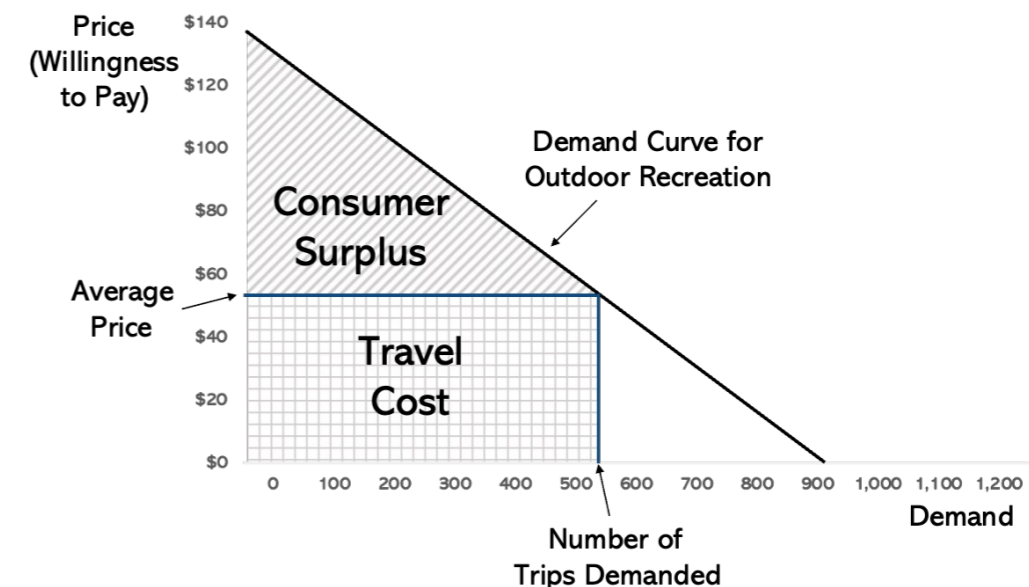
To better visualize this concept, refer to Figure 2. This figure illustrates the relationship between willingness to pay, travel cost, consumer surplus, and visits through the depiction of the demand curve. The demand curve shows the quantity of visits demanded in relation to the travel cost, which is used as a proxy for price. The entire shaded region under the demand curve represents the total willingness to pay for outdoor recreation. Specifically:

- 1. Consumer Surplus:** This is represented by the shaded area situated between the demand curve and the line indicating the average price (or travel cost). It signifies the difference between what visitors would be willing to pay and the actual cost they incur. Essentially, it's the value recreationists get beyond what they actually pay.

- 2. Travel Cost:** The portion of the shaded area under the average price line and below the demand curve. This is the cost visitors incur to engage in the recreational activity, considering both the distance and time required to travel to the site.

The graph further illustrates that if there's no price or travel cost attached to the recreation (i.e., it's free), the total consumer surplus would encompass the entire shaded area under the demand curve and above the x-axis up to the point of maximum demand (900 in this illustration). On the other hand, if the price or cost of travel rises to a prohibitive level, say \$140 in this illustration, the willingness to pay diminishes, meaning no rational visitors would opt to incur such a cost for the activity.

Figure 1. Outdoor Recreation Demand Curve



While Figure 1 provides a clear illustration of the relationship between willingness to pay, travel cost, and consumer surplus, it's crucial to understand that this is a composite representation. In actuality, this curve is an aggregate and average of hundreds of thousands of individual demand curves for river-based outdoor recreation. Each of these individual curves represents the unique preferences, values, and willingness to pay of a specific visitor.

In practice, the TCM requires the following information:

- 1. Distance Traveled:** Leveraging mobile location data, the straight-line distance from a device's home location to the recreational site is estimated. Recognizing the complexities inherent in a comprehensive road network analysis, a broadly accepted approximation is adopted: a straight-line distance of 1 mile approximates to 1.417 road miles or roughly 1.5 minutes of driving.¹³
- 2. Value of Time:** Typically, the median income divided by 2,080 hours is used to arrive at an hourly rate that represents the value of peoples' time. This amounted to \$15.17 per hour for this analysis.¹⁴
- 3. Cost of Travel:** The 2022 average federal mileage rate of \$0.605 per mile was used.¹⁵

Upon determining each visitor's travel cost, reflecting their willingness to pay for recreation, a demand curve was generated. Data from the nearest 90% of devices was incorporated, a threshold chosen to remove potential outliers and ensure a representation that's more reflective of a typical visitor's value assessment. The area between the curve—indicating maximum willingness to pay—and actual travel costs represents the consumer surplus. Aggregating this provides its total economic contribution.

The analysis yields notable findings. Based on the collected data and considering the distances traveled by visitors, the average consumer surplus was calculated to be \$50.40 per person, per day. Multiplying this value by the total visitation of 252,000 results in a total consumer surplus of \$12.7 million for the ICON access points. Such figures highlight the immense value visitors associate with these recreational spots, beyond just their direct spending-related benefits.

It's worth reiterating that the calculated consumer surplus is a direct reflection of the value visitors gain, separate from on-site expenditures or revenue from tourism and related commercial activities, which are tackled in other sections of the report. Furthermore, as sites gain prominence and desirability, perhaps from branding initiatives like becoming an ICON site, the consumer surplus tends to increase. This is because as sites become more coveted, visitors are often willing to travel further, indicating a higher perceived value. Hence, branding and marketing efforts don't just amplify visitation numbers; they can increase the value of existing sites. This underscores the multi-layered significance of ICON's access points, both as centers of health and recreation, and as powerful drivers of economic value.



Health Benefits

This analysis also estimated the economic value of physical and mental health benefits associated with recreation at ICON access points. This approach estimates the future healthcare-related cost savings realized by individuals who actively engage in physical activity during outdoor recreation.

Recreational spaces that provide opportunities for physical activity, like the ICON Water Trails access points, are increasingly important given the significant health impacts of sedentary lifestyles. A 2011 study by Iowa State University revealed the economic costs of physical inactivity in Iowa, which amounted to approximately \$6.18 billion in 2011 dollars.¹⁶ This sum encompassed factors like decreased worker productivity, elevated medical costs, and increased workers' compensation claims. At the time and as is now, Iowa faced one of the highest obesity rates in the Midwest. Various factors contributed to this, including limited access to nutritious food options, fewer opportunities for regular physical activity, and socio-economic challenges.

To quantify these health benefits, an 'avoided cost' methodology is applied. This approach doesn't directly assign a value to health but evaluates the potential economic savings achieved by mitigating negative health outcomes. By breaking down the 2011 economic impact of inactivity into a per-person per-visit cost, then adjusting to 2022 values, a per-day health benefit of approximately \$66.46 is derived. With roughly 252,000 access site visits in 2022, this results in a cumulative economic benefit of \$16,739,158. Beyond physical benefits, interactions with natural settings have also been linked to cognitive and emotional improvements, including enhanced memory and mood.

Key Takeaways on Non-Market Benefits

The analysis of non-market benefits reveals the value and significance of ICON's access points. Beyond direct financial metrics, these sites promote individual well-being and broader community economic health. The key insights derived from this analysis are:

- 1. Consumer Surplus as a Valuation Tool:** A significant consumer surplus of \$12.7 million emphasizes the immense intrinsic value visitors derive from their experiences at ICON access points, beyond their actual expenditures.
- 2. Economic Savings Through Active Recreation:** The health benefits analysis reveals substantial economic savings of \$16.7 million, underscoring the economic advantages of promoting active outdoor recreation, which can deter potential health-related costs.

Conclusion

Outdoor recreational activities have long been cherished for their ability to enrich our well-being, forge deeper connections with nature, and foster community bonds. Yet, as the data from this analysis reveals, these activities also play a pivotal role in bolstering the economic vitality of the Central Iowa region. The Study Area's ICON access points stand testament to this dual role, serving both as cherished recreational spaces and as economic engines.

The findings from this study include several key takeaways:

- 1. Visitor Engagement:** The ICON access points attracted a considerable number of visitors, with an estimated 252,000 visits between April and October 2022. The majority of these visitors sought river-related activities, while a significant portion also engaged in 'Splash-and-Play' activities.
- 2. Variation Across Access Points:** Visits were not distributed equally across sites. Access points like Birdland Marina emerged as hotspots, driven by their strategic location and rich amenity offerings. In contrast, other sites witnessed lower footfalls, pointing to the need for targeted interventions to bolster their appeal.
- 3. Local vs. Non-local Dynamics:** The distinction between local and non-local visitors isn't just a demographic detail. It has profound economic implications. While locals significantly utilize these sites, it's the non-local visitors, contributing to 31% of the total visitation, that bring fresh financial inflows into the region.
- 4. Economic Multipliers:** The sheer scale of economic activity these sites catalyze is remarkable. An initial spending of \$11 million rippled through the local economy, resulting in an economic output of \$19.6 million, supporting jobs, and boosting local and state tax revenues.
- 5. Policy Implications:** The study's findings lay the groundwork for evidence-based policymaking. Whether it's prioritizing funding for site maintenance, investing in water quality improvement initiatives, or devising targeted marketing campaigns to attract non-local visitors, the data provides the insights needed to shape these decisions.
- 6. Non-market Benefits:** The intrinsic values of the ICON access points extend beyond just monetary transactions. A significant consumer surplus of \$12.7 million underscores the profound personal value visitors attach to their experiences at these sites, reflecting the benefits they derive beyond actual expenditures. Furthermore, the health benefits analysis reveals substantial economic savings of \$16.7 million. This signifies the tangible economic advantages of promoting active outdoor recreation, which can deter potential health-related costs, and highlights the broader societal and well-being advantages these sites bestow upon their visitors.

Yet, beyond these current access points lies a horizon brimming with potential. There are several access points in Central Iowa, currently outside the ICON network, that could significantly benefit from its resources and visibility. The SCORP amplifies this perspective, emphasizing Iowans' pronounced preference for enhanced access to water-based recreation. With a vast majority (87%) prioritizing such access and significant portions indicating specific interests in activities like canoeing, kayaking, or fishing, the stage is set for expansion.

These non-ICON sites, already bustling with activity and contributing to the local economy, stand ready for a transformation. By integrating into the ICON network, these sites could harness the established brand's trust and appeal, potentially driving up visitation and, by extension, economic contributions. A projected 10% surge in visitation post-ICON integration, leading to an estimated additional \$624,000 in direct spending, paints a picture of the untapped potential.

This analysis highlights the powerful relationship between recreation and economics. The existing ICON access points have already proved themselves to be significant recreational and economic assets in the Study Area. The opportunities for potential expansion, driven by the community's aspirations for more access points, indicate a future where these sites play an even larger part in bolstering the regional economy.

Glossary of Terms

Access Point: Designated locations equipped with facilities such as launch ramps and stairs, designed to enable individuals and communities to easily access and engage with water trails for recreational activities.

Avoided Cost Methodology: An approach estimating the economic value of benefits, such as human health, by calculating the incremental cost that is not incurred (e.g., negative health consequences) by engaging in the activity.

Consumer Expenditures: The money spent by visitors on goods and services related to their outdoor recreation activities during their visit, excluding expenses on outdoor recreation equipment not purchased during the visit.

Consumer Surplus: An economic measure that captures the extra value consumers receive from participating in a recreational activity, calculated as the difference between what consumers are willing to pay and what they actually pay.

Economic Contributions: The total expenditures associated with a specific industry or event, including spending by both local and non-local visitors, reflecting the overall economic activity generated within a particular area or region.

Economic Impacts: Spending by non-local visitors, representing new money entering the economy, measuring how an industry attracts external financial inflow to a region.

Economic Output: The total value of transactions triggered by initial spending in an economy, representing overall economic activity.

Employee Compensation: Payments made to workers, including wages, salaries, and fringe benefits provided by the employer, as well as proprietor income.

Employment: The number of jobs, including both part-time and full-time positions, created as a result of economic activities, where one job-year equals one job held by one person for one year.

Fiscal Impacts: The impact of economic activities on public finances, including tax revenues and government expenditures.

ICON Water Trails: A non-profit organization that develops and promotes a network of water trails in Central Iowa, focusing on regional culture, environmental conservation, and recreational activities.

Input-Output Model: A model that illustrates the economic interactions between sectors within a region, detailing the necessary purchases each sector must make from every other sector to produce goods or services, facilitating the tracing of economic activity flows due to changes in spending.

Job-years: A measurement representing the total number of jobs and their duration, where one job-year equals one job held by one person for one year.

Local Visitor: Individuals visiting ICON sites who reside within a 10-mile radius of the access site they visit.

Mobile Location Data: Data from mobile devices indicating user location and movement, used to estimate visitation to recreational sites.

Multiplier Effect: The ripple effects in the economy caused by an initial expenditure, showing how spending in one sector can lead to additional economic activities in various sectors.

Non-local Visitors: Individuals visiting ICON sites who reside outside of a 10-mile radius of the access site they visit.

Non-Market Benefits: Benefits derived from recreational activities that are not traded in the market, such as consumer surplus and health benefits.

Outdoor Recreation Visit: A journey made with the primary intent of engaging in outdoor recreation activities. The trip is considered from start to finish, encompassing only the actions and purchases directly tied to enhancing or facilitating the recreational experience.

Pings: Signals from mobile devices indicating their location at specific times.

Random Forest Regression Model: A machine learning method that uses an ensemble of decision trees to perform regression and classification tasks, combining multiple decision trees' outputs to produce a singular, more accurate prediction.

Region of Analysis: The specific geographical area chosen for conducting economic impact analysis, in this case, Polk County.

River Users: Individuals who engage in river-based activities, accessed via an ICON site.

Splash-and-Play Visits: Visits focused on shore-based recreational activities near the access points. Classified as park visitors who spent the majority of their visit within the Splash-and-Play zones adjacent to the river shores.

Statewide Comprehensive Outdoor Recreation Plan (SCORP): A plan to assess the supply of, and demand for, outdoor recreational opportunities while identifying a list of priority areas for outdoor recreation.

Travel Cost Method (TCM): An economic method estimating the benefits of recreational sites by evaluating the travel costs incurred by visitors.

Value Added: The total market value of all final goods and services produced within a region in a specific timeframe, equating to the wealth or economic output generated by industrial activities, commonly associated with Gross Domestic Product (GDP).

Water Trail: A water trail is a route along a river, creek, lake, or other body of water. Water trails can be used for travel or recreational purposes.

Willingness to Pay: The maximum amount that a consumer is prepared to spend on a good or service, reflecting the perceived value or utility derived from the consumption of the good or service.

Appendix A

Methodology for Developing Expenditure Profiles

Expenditure profiles can either be sourced directly from local surveys or extrapolated from analogous sites. To tailor a spending profile for the ICON access points, we analyzed data from five distinct studies resonating with the characteristics of the Des Moines region. These studies emphasized expenditures related to outdoor recreational activities in or near urban areas. We consciously excluded studies on whitewater recreation, deeming them not pertinent to our setting. The data from these studies, denominated in 2022 USD, is presented below.

Table 11. Comparable Spending Profiles

Expenditure Category	Greater Allegheny Passage (2020) ¹⁷	Huron River (2016) ¹⁸	Northern Forest Canoe Trail (2007) ¹⁹	Upper James River Water Trail (2014) ²⁰	Louisville Waterfront Park, Non-local Day Users (2018) ²¹	Louisville Waterfront Park, Local Day Users (2018)
Restaurant meals	\$14.92	\$6.02	\$8.54	\$6.97	\$21.39	\$8.48
Transportation	\$2.58	\$1.57	\$3.83	\$5.77	\$14.43	\$0.00
Retail	\$6.42	\$2.05	\$3.94	\$4.09	\$21.06	\$8.13
Grocery	\$5.89	n/a	\$4.82	n/a	n/a	n/a
Recreation (access fees, rentals, outfitters)	\$4.20	\$3.37	\$2.16	\$4.09	n/a	n/a
Entertainment	n/a	n/a	\$0.79	\$0.84	\$28.89	\$7.95
Other	\$1.70	\$0.74	\$0.83	\$4.09	n/a	n/a
Total	\$35.70	\$13.74	\$24.92	\$25.84	\$85.77	\$24.57

Given that no single study reviewed provided a complete snapshot of spending patterns for the Des Moines region or a realistic total spending amount, the decision was made to consolidate these studies into a single spending profile. The spending patterns were transferred from one study, the Northern Forest Canoe Trail, onto another study, the Louisville Waterfront Park Study. This was done separately for local users (individuals who live within the city where the recreational site is located) and non-locals (individuals who travel from their home city to a different city's recreational site, even if it's just the next town over).

To further refine the analysis, the Louisville study was adjusted to account for differences in the cost of living between Louisville and the Des Moines-West Des Moines Metropolitan Statistical Area. This minor adjustment ensured the accuracy of the expenditure profile.

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