

The Economic Benefits of
Johnson County Park & Recreation District
Johnson County, Kansas



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LAND FOR PEOPLE

The Economic Benefits of Johnson County Park & Recreation District Johnson County, Kansas

The Trust for Public Land

May 2015

Cover: Shawnee Mission Park kayaker.

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Executive summary

The Johnson County Park & Recreation District (JCPRD) was established in 1955 and is the only special park district in Kansas. Its mission is to enhance the quality of life in the most populous county in the state by providing high-quality parks, services, and recreation programs. To that end, JCPRD manages over 9,700 acres of parkland, over 90 miles of trail, and multiple recreation facilities (see map on page 7).

JCPRD's various park and recreational venues include a nature center, off-leash dog areas, sports complexes, golf courses, native prairies, beaches and marinas, playgrounds, a 22-acre event site, an adventure center, and an outdoor theater. The diverse recreational opportunities that JCPRD's parks and facilities provide to the public for free or minimal cost include biking, birding, boating, disc golfing, exercising, exploring nature, fishing, hiking, horseback riding, picnicking, swimming, walking, wildlife viewing, and more.

By providing park areas and access to an array of outdoor activities, JCPRD generates numerous economic benefits within the local community. Parks and trails enhance property values, provide recreational opportunities, improve human health, attract visitors, and provide natural goods and services such as filtering air pollutants and managing stormwater.¹ They support local jobs, boost spending at local businesses, and create local tax revenue. Specifically, these park areas produce the following economic benefits (see Table 1):

- Parks and trails increase the value of nearby residential properties because people enjoy living close to parks and trails and are willing to pay for the privilege. JCPRD parks raise the value of nearby residential properties by \$24.1 million and increase property tax revenues by \$337,000 a year (see Table 2).
- Parks reduce stormwater by capturing precipitation, slowing its runoff, and reducing the volume of water that enters the stormwater system. Parks in Johnson County provide stormwater management valued at \$8.94 million annually (see Table 4).
- Trees and shrubs in parks remove air pollutants that endanger human health and damage structures. Such spaces provide health benefits and reduce pollution control costs in Johnson County by \$1.33 million per year (see Table 5).
- Tourism is one of Johnson County's largest industries, producing \$1.42 billion in visitor spending annually.
- The Trust for Public Land estimates that approximately 37 percent of visitors to Johnson County come to visit parks, trails, and recreational facilities. These visitors spend \$524 million annually in the local economy and generate \$18.4 million and \$12.9 million in state and local tax revenues, respectively, for a total of \$31.3 million (see Table 7).
- A portion of the visitors to Johnson County parks, trails, and recreational facilities, approximately 22,200, recreate at JCPRD parks and facilities each year. In 2013, these visitors spent \$7.37 million (see Table 6).

¹ In this report, The Trust for Public Land makes distinctions between JCPRD and municipal parks in Johnson County. These definitions may be slightly different from those used in past park publications; however, they are necessary to conduct an economic analysis of parks in Johnson County. Every effort was made to quantify the economic benefits of each type of park; however, data and methodological limitations prevented the estimation for each category. The economic benefits generated by these categories of parks are clearly identified throughout the report. JCPRD parks include all parks, trails, greenways, and facilities owned and managed by JCPRD, such as Shawnee Mission and Heritage Parks. Municipal parks include all parks, trails, greenways, and facilities in Johnson County that are owned and managed by municipal governments, such as South Lake Park in Overland Park and Listowel Park in Shawnee. Additionally, some analyses within the report were conducted for all parks in Johnson County, including both JCPRD and municipal parks.

- Residents also enjoy JCPRD parks, trails, and recreational facilities. Each year residents of Johnson County receive a benefit of \$39.5 million for the direct use of these park facilities (see Table 9).
- Independent research shows that park use translates into increased physical activity, resulting in medical care costs savings. While all Johnson County residents who visit JCPRD parks improve their health by visiting, approximately 16,900 adult residents use JCPRD parks, trails, and recreational facilities exclusively to engage in physical activity at a level sufficient to generate measureable health benefits, yielding annual medical cost savings of \$21.2 million (see Table 10).
- JCPRD parks, trails, and recreational facilities provide a number of other important economic benefits that cannot be quantified at this time. These include improving quality of life and boosting the local economy by attracting businesses and residents. These benefits create substantial and sustained economic value, which unfortunately is difficult to quantify.

This study illustrates that JCPRD parks, trails, and recreational facilities are key economic drivers that contribute millions annually in economic benefits.

JCPRD contributes to the regional economy by providing a host of park and trail amenities directly, but it also plays a critical role in fostering partnerships and providing resources to other entities that further support the provision of these resources in the community. For example, JCPRD works extensively with local municipalities and trail groups to create and operate a large network of trails throughout the county. Over the past 25 years, JCPRD has taken a leadership role in the design and development of the county's trail network, working with nonprofit groups,



JEFF PIERCE

Kill Creek Park Native Prairie

municipalities, and ad hoc volunteer groups to increase the quality and quantity of trails available to the community. For example, the popular Indian Creek Trail is the result of a partnership between JCPRD and the cities of Leawood, Overland Park, and Olathe. Additionally, JCPRD has hosted training programs for trail volunteers and municipalities to learn about trail building and stewardship.

Table 1. Summary of estimated annual benefits of parks and trails²

BENEFIT CATEGORY	PARK TYPE	TOTAL
Enhanced property value		
Additional property value ³	JCPRD parks	\$24,100,000
Additional property tax	JCPRD parks	\$337,000
Additional property value ⁴	Municipal parks	\$490,000,000
Additional property tax	Municipal parks	\$6,840,000
Stormwater retention value	All parks	\$8,940,000
Air pollution removal value	All parks	\$1,330,000
Park tourism value		
Visitor spending	JCPRD parks	\$7,370,000
Visitor spending	All Parks	\$524,000,000
Sales tax on visitor spending	All parks	\$31,300,000
Direct use value	JCPRD parks	\$39,500,000
Human health value	JCPRD parks	\$21,200,000



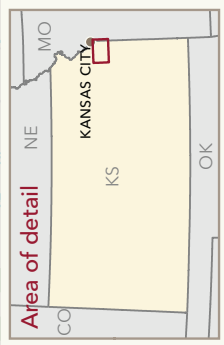
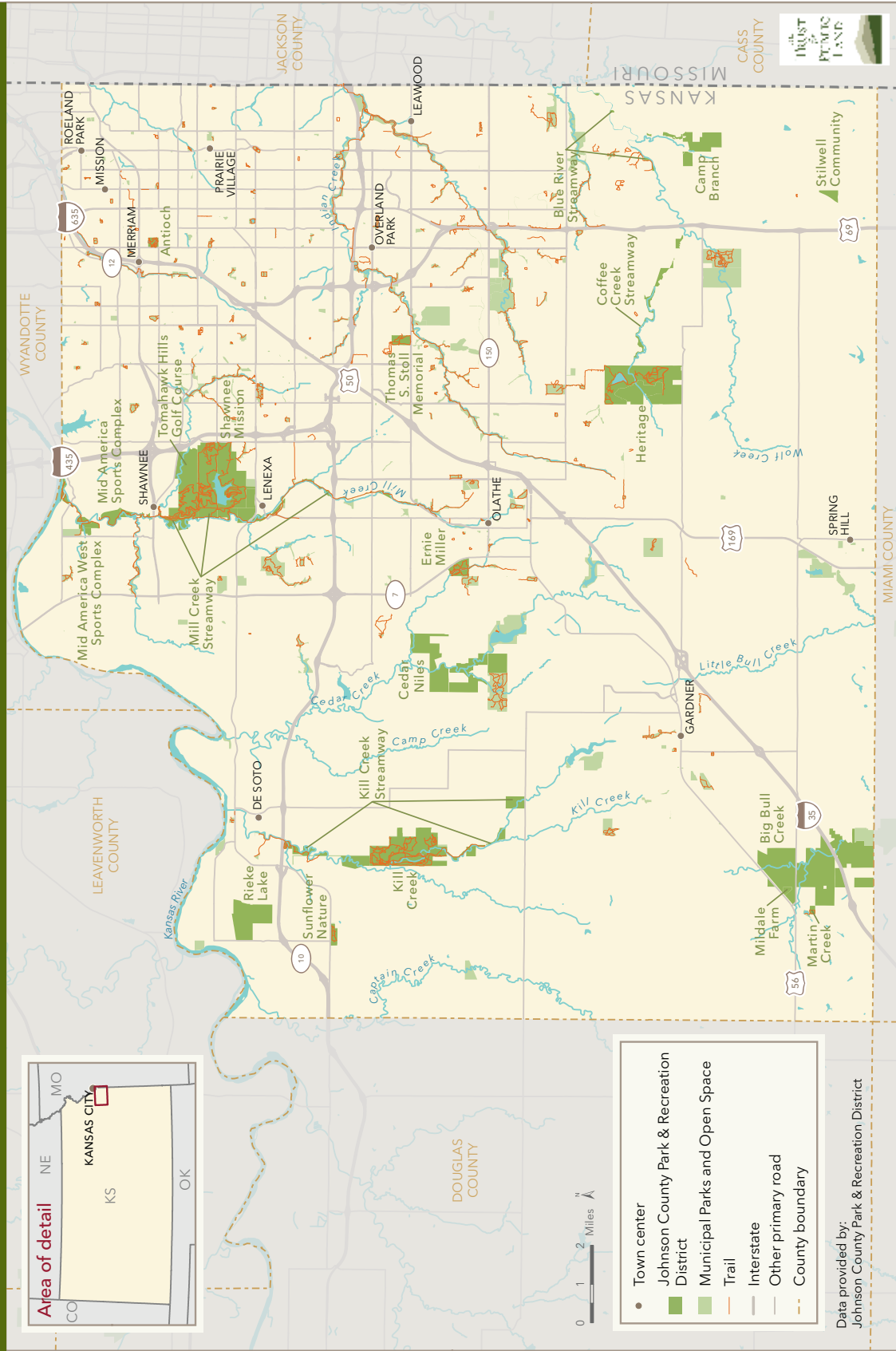
LORY RODAK

Mill Creek Streamway Park Trail

2 All numbers reported in the text and tables are rounded to three significant digits unless otherwise noted. Because of rounding, some report figures and tables may appear not to sum.
 3 Additional property value is a one-time boost to the properties' values and does not accrue each year.
 4 Additional property value is a one-time boost to the properties' values and does not accrue each year.

JOHNSON COUNTY PARK & RECREATION DISTRICT

JOHNSON COUNTY, KANSAS



- Town center
- Johnson County Park & Recreation District
- Municipal Parks and Open Space
- Trail
- Interstate
- Other primary road
- - - County boundary

Data provided by:
Johnson County Park & Recreation District



April 8, 2015

Enhanced property value and increased tax revenues

Study after study has shown that parks and trails have a positive impact on nearby residential property values.⁵ All things being equal, most people are willing to pay more for a home close to a nice park. The property value added by park areas is separate from the direct recreational use value gained; property value goes up even if the resident never visits the park.

Property value is affected primarily by two factors: distance from, and quality of, the park. While proximate value can be measured up to 2,000 feet from a park, most of the value—whether such spaces are large or small—is within the first 500 feet. Therefore, this analysis of enhanced property value has been limited to 500 feet. Moreover, people’s desire to live near a park also depends on the quality of the park. Beautiful natural resource areas with public access, scenic vistas, and bodies of water are markedly valuable. Those with excellent recreational facilities are also desirable, although sometimes the greatest property values are realized a block or two away if there are issues of noise, lights, or parking. Less attractive or poorly maintained parks may provide only marginal value to surrounding property values, and in some cases, these areas may actually reduce nearby property values.

Determining an accurate value of every property next to every park is technically possible but prohibitively time consuming and costly. Therefore, an extrapolative methodology was formulated to arrive at a reasonable estimate. First, The Trust for Public Land identified all homes within 500 feet of parks. A home consists of a residential structure that is owned and taxed; thus, this analysis includes multiple unit dwellings (e.g., apartments) and single family homes.⁶ There are 1,630 homes located within 500 feet of JCPRD parks with a total market value of \$481 million and 38,600 homes near municipal parks in Johnson County with a total market value of \$9.80 billion, for a total market value of \$10.3 billion in 2014 (see Table 2).



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Neighborhood entry to Stoll Park

5 Virginia McConnell and Margaret Walls, “The Value of Open Space: Evidence from Studies of Nonmarket Benefits” (Resources for the Future, January 2005); John L. Crompton, “The Impact of Parks on Property Values: Empirical Evidence from the Past Two Decades in the United States” (*Managing Leisure* 10, 2005, pp. 203-218).

6 Other property types were not considered in this analysis because sufficient data were not available to quantify the benefit. Nonresidential property types are rarely studied in the literature as they are much more difficult to statistically analyze because there are more variables that influence value and fewer real estate transactions to compare.

Typically the amount conservation lands add to the value of a property is determined based on the quality of the park. That is, high-quality lands add significant value, average-quality lands add slight value, and low-quality lands reduce value to surrounding residences. Assessing the quality of parks for this type of analysis is difficult given the subjective nature of park quality and the variation in quality across time. As such, this analysis utilizes estimates from the published literature regarding the value of open space on property values. A conservative value of 5 percent has been assigned as the amount that these conserved lands add to the market value of all dwellings within 500 feet.⁷ A 2009 report from the National Association of REALTORS® found the premium for homes near parks can extend three blocks and start at 20 percent for those homes directly adjacent (declining as distance from the park increases).⁸ This analysis estimates that an added \$24.1 million in residential property value existed in 2014 because of proximity to JCPRD parks, and \$490 million for municipal parks within Johnson County, for a total of \$514 million (Table 2).

The residential property tax rates for each parcel were used to determine how much additional tax revenue was raised by local units of government. Property tax rates differ by parcel depending on the city or township in which they are located. The total value captured in additional property tax revenue derived from JCPRD parks is \$337,000 each year, \$6.84 million from municipal parks within Johnson County, summing to a total of \$7.17 million for all parks each year (Table 2). While we analyzed them separately, JCPRD contributes to the enhanced property value of municipal parks and trails by playing a critical role in fostering partnerships and providing resources to municipalities and others that further support the provision of these resources in the community. For example, JCPRD works extensively with local municipalities and trail groups to create and operate a large network of shared use trails throughout the county that are owned and operated by a variety of municipalities.

These estimates are conservative for the following reasons. First, the estimates leave out all the value of dwellings located beyond 500 feet from a park, even though evidence exists for marginal property value beyond such distances. Second, as mentioned, they only measure a 5 percent marginal value for parks though studies have shown up to a 20 percent premium and marginal values up to distances of 2,000 feet.⁹ Therefore, these estimates provide a lower bound estimate of the “true” impact of parks on property values.

Table 2. Enhanced residential property value due to proximity to parks in Johnson County (2014)

TYPE	TOTAL MARKET VALUE	ADDITIONAL MARKET VALUE	ADDITIONAL PROPERTY TAX REVENUE
JCPRD Parks	\$481,000,000	\$24,100,000	\$337,000
Municipal Parks	\$9,800,000,000	\$490,000,000	\$6,840,000
All Parks	\$10,300,000,000	\$514,000,000	\$7,170,000

7 John L. Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base* (second edition, Ashburn, Virginia: National Recreation and Park Association, 2004).

8 National Association of Realtors, *On Common Ground* (Winter 2009).

9 National Association of Realtors, *On Common Ground* (Winter 2009); John L. Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base* (second edition, Ashburn, Virginia: National Recreation and Park Association, 2004).

Reducing stormwater

Stormwater management is an issue for communities in Johnson County. When rainwater flows off roads, sidewalks, and other impervious surfaces, it can cause flooding, erosion, and declines in water quality by carrying pollutants with it. Unfiltered rainwater can flow directly into waterways, causing significant and costly ecological problems, such as algal blooms.

In response to the growing need to manage stormwater, the City of Overland Park has established requirements for the treatment of stormwater runoff from new development or redevelopment activities.¹⁰ However, dealing with stormwater is an expensive endeavor. A 2007 cost analysis of implementing Best Management Practices (BMPs) under Overland Park's stormwater treatment standards found the average costs per acre ranged from \$3,100 (2007 dollars) for single family residential development to \$12,800 (2007 dollars) for commercial/office development.¹¹

The parks in Johnson County reduce stormwater by capturing precipitation and/or slowing its runoff. Large pervious (absorbent) surface areas allow precipitation to infiltrate and recharge groundwater. Also, vegetation provides considerable surface area that intercepts and stores rainwater, allowing some to evaporate before it ever reaches the ground. In effect, parks function like mini storage reservoirs and are the original form of green infrastructure.

The Western Research Station of the U.S. Forest Service developed a model to estimate the value of stormwater retained by parks. This model was run for this analysis by researchers at the University of California, Davis. Inputs to the model consist of geographic location, climate region, surface permeability, acres of parkland, and land cover and vegetation types. This model provides a preliminary estimate of the value of stormwater retention for parks in Johnson County.

First, The Trust for Public Land determined the perviousness of the parks in Johnson County using the Johnson County Automated Information Mapping System (AIMS). The remaining areas consist of impervious roadways, trails, parking areas, buildings, hard courts, and water surfaces. Johnson County parks are 94 percent permeable; 6 percent of the precipitation falls on impermeable surfaces (Table 3).

Table 3. Acreage and permeability of all parks in Johnson County (2014)

ACRES OF PARKS	ACRES	PERCENT OF TOTAL AREA
With pervious soil	16,200	94%
With impervious soil	1,030	6%
Total	17,200	100%

10 City of Overland Park, Kansas, *Municipal Code* (Chapter 16.210, Stormwater Treatment).

11 City of Overland Park, Kansas, *Overland Park Site BMP Cost Analysis* (prepared by Olsson Associates, October 31, 2007).

Second, The Trust for Public Land estimated the amount of perviousness of the rest of Johnson County (i.e., the county without its parkland) using the same data. The pervious land consists largely of residential front and back yards, and private natural areas such as cemeteries, public institution grounds, and office campuses. Johnson County is 78 percent permeable, meaning that 22 percent of the precipitation falls on impermeable surfaces.

Third, the University of California, Davis, calculated the amount and characteristics of rainfall from U.S. weather data. Typically, Johnson County receives 34 inches of rain per year. The model, which combines aspects of two other models developed by researchers at the Forest Service, uses precipitation data for Johnson County to estimate annual runoff. The reduction in runoff attributable to parks in Johnson County was calculated by comparing the modeled runoff with the runoff that would leave a hypothetical park site of the same size but with land cover that is typical of surrounding development (i.e., with streets, rooftops, or parking lots). In other words, this analysis does not measure all of the water that is absorbed by parks in Johnson County, but instead the amount of water that is retained by parks above what would be retained had the park land been developed similarly to the rest of Johnson County.

The final step in determining the economic value of stormwater retention by parks in Johnson County is estimating the cost to manage stormwater using infrastructure (e.g., detention ponds, constructed wetlands, and infiltration basins). It is difficult to estimate the marginal cost of stormwater management because the communities in Johnson County do not directly treat stormwater. However, some communities, like Overland Park, do require treatment of stormwater from new and redevelopment activities. National studies have found that construction and annual maintenance costs for common stormwater BMPs range from \$0.04 to \$0.83 per cubic foot.¹² These costs match closely with average costs of sites in Overland Park where BMPs have been installed.¹³ To be conservative, The Trust for Public Land uses the lower bound of the stormwater treatment cost range (\$0.04 per cubic foot) to estimate the value of stormwater retention provided by parks. A total annual stormwater retention value of \$8.94 million is estimated for parks in Johnson County (Table 4).

Table 4. Annual stormwater cost savings from all parks in Johnson County (2014)

	INCHES	AMOUNT
Rainfall	34.00	2,120,000,000 cubic feet
Runoff with parks	1.82	113,000,000 cubic feet
Runoff without parks	5.12	319,000,000 cubic feet
Runoff reduction from parks	3.30	206,000,000 cubic feet
Runoff reduction rate		64%
Cost of treating stormwater (\$ per cubic foot)		\$0.04
Total savings from parks		\$8,940,000

12 City of Overland Park, Kansas, *Memorandum Overland Park Post Construction BMP Ordinance and Standards: Summary and Conclusions from National Data Research* (prepared by Olsson Associates, July 25, 2007).

13 City of Overland Park, Kansas, *Overland Park Site BMP Cost Analysis* (prepared by Olsson Associates, October 31, 2007).

Air pollution removal by vegetation

Air pollution is a significant and expensive problem associated with metropolitan growth that injures human health and damages structures. Human cardiovascular and respiratory systems are affected, with broad consequences for health care costs and productivity. In addition, acid rain, smog, and ozone increase the need to clean and repair buildings and other costly infrastructure.¹⁴

Trees and shrubs have the ability to remove pollutants from the air we breathe. Leaves absorb gases such as nitrogen dioxide, sulfur dioxide, carbon monoxide, and ozone. Particulate matter, which includes small particles of dust, metals, chemicals, and acids, can also be removed by adhering to plant surfaces. The vegetation in parks plays a role in improving air quality, helping nearby areas avoid the costs associated with pollution.¹⁵

The Northern Research Station of the Forest Service in Syracuse, New York, designed a calculator for The Trust for Public Land to estimate air pollution removal by urban vegetation.



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Shawnee Mission Park Small Lakes

14 American Lung Association, "Ozone Pollution" (*State of the Air*, accessed October 2, 2014, <http://www.stateoftheair.org/2013/health-risks/health-risks-ozone.html#howharms>); American Lung Association, "Particulate Pollution" (*State of the Air*, accessed October 2, 2014, <http://www.stateoftheair.org/2013/health-risks/health-risks-particulate.html#ref31>); U.S. Environmental Protection Agency, *The Plain English Guide to the Clean Air Act* (Publication No. EPA-456/K-07-001, 2007, accessed October 2, 2014, <http://www.epa.gov/air/peg/peg.pdf>).

15 David J. Nowak, Satoshi Hirabayashi, Allison Bodine, and Robert Hoehn, "Modeled PM_{2.5} Removal by Trees in Ten U.S. Cities and Associated Health Effects" (*Environmental Pollution* 178, 2013, pp. 395-402).

This program, which is based on the Forest Service’s earlier Urban Forest Effects (UFORE) and i-Tree Eco models, is location specific, taking into account the air characteristics of Johnson County.¹⁶

The Trust for Public Land determined the amount of tree canopy cover in the parks and trails in Johnson County using 2012 LiDAR tree canopy data provided by Johnson County’s AIMS.¹⁷ While Johnson County has numerous trees on private property as well as on streets, this study measures only the economic value of trees on park properties. Thirty-four percent of parks are covered by tree canopy.

The i-Tree Eco model was used to estimate hourly changes in annual air pollutant removal and concentration due to air pollution particles depositing themselves onto trees, thereby decreasing the concentration of particles in the air. These changes were then summarized for a year. The calculator then estimates the value of the pollutant removal using the U.S. Environmental Protection Agency’s environmental Benefits Mapping and Analysis Program (BenMAP) and the median cost to prevent a unit of pollution from entering the atmosphere. BenMAP estimates the incidence of adverse health effects and associated monetary values resulting from changes in nitrogen dioxide, sulfur dioxide, and fine particle concentrations.¹⁸ The values for carbon monoxide and coarse dust particles were estimated using national median externality values adjusted to 2010 values using the producer price index.¹⁹

The result of the Air Quality Calculator for the parks in Johnson County was an economic savings of \$1.33 million per year (Table 5).

Table 5. Value of air pollution removed by all parks in Johnson County (2014)

POLLUTANT	POUNDS REMOVED	POLLUTANT REMOVAL VALUE
Carbon monoxide	8,720	\$5,810
Nitrogen dioxide	47,600	\$15,500
Ozone	281,000	\$392,000
Coarse dust particles	126,000	\$396,000
Fine particles	8,590	\$519,000
Sulfur dioxide	45,500	\$4,240
Total	517,000	\$1,330,000

16 David J. Nowak, Satoshi Hirabayashi, Allison Bodine, and Eric Greenfield. “Tree and Forest Effects on Air Quality and Human Health in the United States” (*Environmental Pollution* 193, 2014, pp. 119-129).

17 LiDAR stands for Light Detection and Ranging.

18 Fine particles, also known as Particulate Matter 2.5 or PM2.5, are less than 2.5 micrometers in diameter and are so small they can only be detected with an electron microscope. Sources include all types of combustion, including motor vehicles, power plants, and residential wood burning. AirNow, “Particle Pollution (PM10) and (PM2.5)” (accessed May 6, 2015, <http://www.airnow.gov/index.cfm?action=aqibasics.particle>); U.S. Environmental Protection Agency, “Environmental Benefits Mapping and Analysis Program (BenMAP)” (accessed May 24, 2012, <http://www.epa.gov/air/benmap/>).

19 Coarse dust particles, also known as Particulate Matter 10 or PM10, are between 2.5 and 10 micrometers in diameter and are generated by crushing and grinding operations as well as dust stirred up by cars traveling on roads. AirNow, “Particle Pollution (PM10) and (PM2.5)” (accessed May 6, 2015, <http://www.airnow.gov/index.cfm?action=aqibasics.particle>); F. J. Murray, L. Marsh, and P. A. Bradford, *New York State Energy Plan, Vol. II: Issue Reports* (New York State Energy Office, Albany, NY, 1994); U.S. Department of Labor Bureau of Labor Statistics, “Producer Price Indexes” (accessed September 11, 2012, www.bls.gov/ppi/).

Recreation and tourism

Tourism is one of the largest industries in Kansas.²⁰ In 2013, tourism directly accounted for \$2.5 billion of total Kansas gross domestic product and over 61,300 jobs. Kansas hosted 33.7 million travelers who spent \$5.97 billion. Overnight travelers accounted for 40 percent of total trips, and 75 percent of traveler spending. Additionally, \$945 million in taxes were directly and indirectly generated by tourism, with \$257 million and \$300 million in state and local taxes, respectively. Johnson County is responsible for a large proportion of the state's tourism industry, with the county's \$1.42 billion representing 24 percent of the state's visitor spending. This spending generated \$84.6 million in state and local tax revenue.²¹

Outdoor recreation is an important subset of the tourism industry. In fact, touring, sightseeing, and camping are among the top activities of Kansas visitors.²² Parks and trails in Kansas play an important role in the economy because they attract tourists and provide opportunities for outdoor recreation. These individuals then spend money that supports local employment and provides tax revenue. In Kansas, outdoor recreation annually generates \$7.1 billion in consumer spending, 85,000 direct Kansas jobs, \$2 billion in wages and salaries, and \$477 million in state and local tax revenue.²³

Federal, state, and local parks in Kansas attract millions of visitors each year who spend money in the local economy and support local jobs. These various levels of government each make contributions that are essential to the establishment and maintenance of park spaces and trails for public use. These parks and trails attract visitors both locally and regionally. For example, Tallgrass Prairie National Preserve, located in Strong City, received approximately 17,900 recreation visits in 2011, generating over \$900,000 in visitor spending and providing 14 jobs.²⁴ National



Boccia Americas Cup at New Century Fieldhouse

20 Daniel Lichtenstein and Shane Norton, "2011 Travel Year: Tourism Satellite Account Results" (IHS Inc., 2013).

21 Adam Sacks and Christopher Pike, "The Economic Impact of Travel in Kansas: Tourism Satellite Account" (*Tourism Economics*, 2013); Travel Kansas, "Regional and County Economic Impact" (accessed February 13, 2015, <http://www.travelks.com/industry/>).

22 D. K. Shifflet and Associates, Ltd. "DIRECTIONS Performance/Index Survey" (*AAA Members Travel to Kansas*, 2005); Kansas Department of Commerce, Travel and Tourism Development Division, "Kansas Cultural and Heritage Research Study" (December 7, 2006).

23 Outdoor Industry Association, "The Outdoor Recreation Economy: Ohio" (accessed February 12, 2015, http://outdoorindustry.org/images/ore_reports/KS-kansas-outdoorrecreationeconomy-oia.pdf).

24 Yue Cui, Ed Mahoney, and Teresa Herbowicz, *Economic Benefits to Local Communities from National Park Visitation, 2011* (National Park Service, Natural Resources Report NPS/NRSS/ARD/NRR-2013/632).

Park Service spending by visitors to Kansas was \$4 million in 2011, supporting 67 jobs.²⁵ The U.S. Department of the Interior reports that its activities in Kansas’s recreation sector supported 740 jobs in 2013.²⁶

Kansas also has 26 state parks that attract over 6 million visitors each year and employ approximately 460 full-time employees.²⁷ State parks provide opportunities for hunting, fishing, boating, wildlife watching, hiking, exploring nature, and more. An estimated 4 million people visited Kansas wildlife areas and fishing lakes in 2013.²⁸ Kansas sportsmen alone spend \$607 million each year.²⁹

JCPRD, along with its municipal and nonprofit partners, plays a critical role in providing large trail networks and an expansive patchwork of parkland within Johnson County. These trails and parks are essential to the county’s ability to attract visitors from outside the county. For example, Mill Creek Streamway Park is a beautiful linear park with over 17 miles of pedestrian and bicycle trails, extending from Nelson Island on the Kansas River, south through the cities of Shawnee and Lenexa, and ending in the city of Olathe. In 2010, the Gary L. Haller Trail, located in the park, was designated by former Secretary of the Interior, Ken Salazar, as a National Recreation Trail, given its role as a regional tourist attraction and model for other communities in the region. This trail attracts many visitors each year.

Overall, JCPRD estimates that there were over 7.3 million recreational visits to the park system in 2013.³⁰ In addition to using the recreational facilities, JCPRD and affiliate organizations host programs, special events, triathlons, walkathons, and festivals, including the Heritage Park Duathlon, Shawnee Mission Triathlon, and the Turkey Creek Festival. Many individuals come to JCPRD parks and facilities from outside the county. For example, in 2013, JCPRD events, combined with sports tournaments, attracted 22,200 visitors to Johnson County, generating over 53,000 overnight stays and an associated \$7.37 million in visitor spending (Table 6).

Table 6. JCPRD tourism visitors and spending (2013)

CATEGORY	
Out-of-town visitors to JCPRD events and facilities ³¹	22,200
Overnight stays ³²	53,000
Spending per overnight visitor to Johnson County ³³	\$332
Total JCPRD visitor spending	\$7,370,000

25 Yue Cui, Ed Mahoney, and Teresa Herbowicz, *Economic Benefits to Local Communities from National Park Visitation, 2011* (National Park Service, Natural Resources Report NPS/NRSS/ARD/NRR-2013/632).

26 U.S. Department of the Interior, *Economic Report: FY 2013* (July 11, 2014).

27 Kansas Department of Wildlife, Parks, and Tourism, *2013 Annual Report*; Kansas Department of Wildlife, Parks and Tourism, “About KDWP” (accessed February 12, 2015, <http://kdwpt.state.ks.us/KDWPT-Info/About-KDWPT>).

28 Kansas Department of Wildlife, Parks and Tourism, *2013 Annual Report*.

29 Southwick and Associates, American Sportfishing Association, and Association of Fish and Wildlife Agencies, *2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* (U.S. Fish and Wildlife Service).

30 Johnson County Park & Recreation District, *Annual Report 2013*.

31 Johnson County Park & Recreation District, *2013 Registration and Event Data*.

32 Ibid.

33 Adam Sacks and Christopher Pike, “The Economic Impact of Travel in Kansas: Tourism Satellite Account” (*Tourism Economics*, 2013).

Park tourism

Tourists visit parks and trails in Johnson County to participate in a wide variety of activities. Though not always recognized, parks and trails play a significant role in the tourism economy of Johnson County. Tourists' activities, the number of visitors, and tourist spending determine the contribution of parks and trails to the tourism economy. In Johnson County, parks and trails are managed by JCPRD, municipalities, and other organizations; however, only some of them actually track visitor numbers and tourist expenditures. Thus, it is not possible to extrapolate the number of visitors to all of the parks and trails in the county based on those numbers alone.

Nonetheless, The Trust for Public Land utilized information provided by Tourism Economics and Travel Kansas to measure the value of parks and trails in Johnson County's tourism economy. One can get a sense of how much money is spent and how much tax revenue is earned in Johnson County due to its parks, trails, and recreational facilities by applying the percentage of tourists who primarily visited these amenities to the direct travel expenditures (e.g., lodging, food, and gas) and tax revenues within Johnson County.³⁴

Parks, trails, and recreational facilities are important components in the local economy. Tourists spend \$1.42 billion in Johnson County each year (Table 7). Data are not currently available to explain the motivations for tourist visits to Johnson County; however, one local study found that 37 percent of Overland Park visitors cite the area's parks, trails, and recreational facilities as a top reason for visiting. Therefore, The Trust for Public Land assumes a similar rate applies county wide.³⁵ Thus, approximately \$524 million in spending each year is attributable to the parks, trails, and recreational facilities that make the outdoors and recreational opportunities accessible to tourists. Spending by these park-related visitors generates \$18.4 million and \$12.9 million in state and local tax revenues, respectively, for a total of \$31.3 million.

Table 7. Tourism spending and the outdoors in Johnson County (2013)

CATEGORY	
Total direct travel spending in Johnson County ³⁶	\$1,420,000,000
Percentage of tourists whose primary reason to visit Johnson County is parks, trails, and recreational facilities ³⁷	37%
Approximate spending of tourists whose primary reason to visit Johnson County is parks, trails, and recreational facilities	\$524,000,000
State tourism tax revenue in Johnson County ³⁸	\$49,700,000
State tourism tax revenue attributable to parks, trails, and recreational facilities	\$18,400,000
Local tourism tax revenue in Johnson County ³⁹	\$34,800,000
Local tourism tax revenue attributable to parks, trails, and recreational facilities	\$12,900,000

34 The most recent data available were from 2013.

35 Overland Park Convention and Visitors Bureau, *2013 Annual Report*.

36 Travel Kansas, "Regional and County Economic Impact" (accessed February 13, 2015, <http://www.travelks.com/industry/>).

37 Based on a market analysis of Overland Park conducted by the Overland Park Convention and Visitors Bureau, *2013 Annual Report*.

38 Travel Kansas, "Regional and County Economic Impact" (accessed February 13, 2015, <http://www.travelks.com/industry/>); Personal Communications with Christopher Pike, Tourism Economics, 2/17/2015.

39 Ibid.

Direct recreational use value

In addition to bolstering the tourism economy, parks and trails are widely used by local residents. Statewide, recreation and parks provide substantial economic benefits to Kansas citizens. In fact, over 73 percent of Kansans use recreation and park services at least once per week.⁴⁰ JCPRD parks and trails provide direct recreational value to residents by providing access to recreational opportunities, such as walking on trails, observing nature and wildlife, visiting playgrounds, biking, and participating in team sports.

Most direct recreational uses in public parks, such as JCPRD's parks, are free of charge, but economists can still calculate value by determining the consumer's "willingness to pay" for the recreation experience in the private marketplace. In other words, if parks were not available in Johnson County, how much would the residents have to pay for similar experiences in commercial facilities or venues? Rather than income, the direct use value represents the amount of money residents save by not having to pay market rates to indulge in the park activities they enjoy. The value from nonresident uses of parks was excluded from this analysis but was covered in the "Park tourism" section, which measures the income to local businesses from visitor spending (see page 16).

The Trust for Public Land first determined the number of visits to JCPRD facilities through a professionally conducted telephone survey of 600 Johnson County residents. Residents provided information related to their own visitation to JCPRD parks and facilities and the types of activities in which they participated. Adults with children under the age of 18 also provided information about the visitation and participation of one of their children. This random-digit-dialed survey was conducted in August 2014 and was statistically representative of Johnson County residents with an accuracy level of plus or minus 6 percent.



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Shawnee Mission Park

40 Jayhawk Consulting and the University of Kansas School of Business, *2010 Economic Impact Report: Parks and Recreation in Kansas* (commissioned by the Kansas Recreation and Park Association).

The results of the survey indicate that 69.8 percent of adults and 78.8 percent of children have visited JCPRD parks and facilities in the last 12 months. The survey also indicated that the most popular activities for children were visiting playgrounds, followed by participating in team sports, walking or hiking, exploring nature, and biking. For adults, walking or hiking was followed by exploring nature, visiting playgrounds, biking, and picnicking. See Table 8 for a complete listing of participation by activity. These results are generally consistent with previous research, including recent park surveys conducted by JCPRD and a community survey commissioned by the district that found many park users visit the park system to walk, hike, relax, visit playgrounds, bicycle, picnic, and use off-leash dog areas.⁴¹

For the purpose of the direct recreational use analysis, the participation data were conservatively adjusted to account for over reporting of park use by respondents, as well as for participation in

Table 8. Reported participation of Johnson County residents using JCPRD parks, trails, and facilities—by activity (2014)

ACTIVITY	PARTICIPATION (ANNUAL VISITS)		
	TOTAL	ADULTS	CHILDREN
Walk or hike	1,720,000	1,330,000	395,000
Explore nature, view birds or wildlife, or go geocaching	1,240,000	915,000	323,000
Visit playground or play area	1,230,000	616,000	617,000
Bicycle	804,000	571,000	233,000
Participate in team sports (e.g., basketball, baseball, soccer)	804,000	308,000	495,000
Picnic or sit on benches	731,000	510,000	220,000
Run or jog	667,000	459,000	207,000
Visit off-leash dog areas	423,000	278,000	144,000
Engage in general exercise	283,000	209,000	74,000
Use fitness or gymnastics centers	75,100	54,200	20,900
Go fishing	48,300	36,500	11,700
Golf	47,800	40,700	7,080
Visit The Theatre in the Park	47,200	37,700	9,440
Visit Ernie Miller Nature Center	46,400	29,400	17,000
Swim in pools	37,500	20,900	16,600
Attend special events, triathlons, walkathons, or festivals	23,900	16,900	6,960
Visit beaches	13,700	4,780	8,940
Canoe, kayak, paddleboard, pedal boat	11,300	9,110	2,510
Horseback ride	7,410	7,110	303

41 Johnson County Park & Recreation District Park Surveys (2007-2014); ETC Institute, 2014 Johnson County Community Survey (submitted to JCPRD, 2015).

multiple activities during a single visit. Once participation data were analyzed, The Trust for Public Land assigned dollar values to each park use of each participant in each activity. This methodology is based on the Unit Day Value method, which is used by the U.S. Army Corps of Engineers and counts park visits by specific activity, assigning each activity a dollar value. The U.S. Water Resources Council's day use values range from \$3 to \$11 for general park use, such as hiking on trails, and from \$15 to \$44 for activities that require specialized equipment and expertise.⁴² The methodology used by The Trust for Public Land also applies estimates of use value from Oregon State University's Recreation Use Values Database. This database contains use values for over 20 activities and is based on over 350 economic valuation studies that estimated the use value of recreation activities in the U.S. and Canada from 1958 to 2006, adjusted to 2010 dollars; however, this analysis used the values most relevant to Kansas and the Midwest.

In quantifying the benefits of resident use, The Trust for Public Land also recognized that not every visit within a given period has the same value to the visitor. In fact, additional uses of a park are less valuable than the first use. For example, an individual's first visit of the year to a playground is worth more than that same individual's 10th visit of the year.⁴³ Additionally, The Trust for Public Land also estimated an average season for different park activities to take into account reduced participation rates in the off-season. Although some people are active in parks 365 days a year, the direct use valuation does not count uses during seasons in which participation rates drop to low levels. Additionally, for activities for which a fee is charged, like golfing at a JCPRD golf course, the per-person fee is subtracted from the imputed value and only the "extra value" is assigned. For example, if playing golf costs \$30 at a JCPRD public golf course and \$85 at a private country club, the direct use value would be \$55.

The result of the Direct Use Calculator for Johnson County is \$39.5 million for 2014 (Table 9).

Table 9. The annual economic value of direct use of JCPRD parks and trails by Johnson County residents (2014)

TYPE OF USE	PERSON VISITS	AVERAGE	
		VALUE PER VISIT	VALUE
Park and trail uses (playgrounds, trails, walking, picnicking, wildlife watching, etc.)	6,820,000	\$4.67	\$31,800,000
Recreational facility uses (pools, fitness centers, team sports, etc.)	1,250,000	\$4.38	\$5,460,000
Special uses (events, The Theatre in the Park, Ernie Miller Nature Center, horseback riding)	125,000	\$12.40	\$1,540,000
Outdoor water resource uses (canoeing, beaches, fishing)	73,300	\$9.33	\$684,000
Total	8,260,000	\$4.78	\$39,500,000

42 The published ranges for FY 2012 are \$3.72 to \$11.17 for general recreation and \$15.13 to \$44.21 for specialized recreation.

43 This is consistent with the economic law of diminishing marginal utility, which recognizes that the more of a good one consumes, within a given time and holding everything else constant, the smaller the gain in the total utility derived from each additional amount. Utility, in this case, is the amount of satisfaction derived from the consumption of park and trail amenities.

Helping to promote human health

Several studies have documented the economic burden related to physical inactivity. One report released in August 2009 by the U.S. Centers for Disease Control and Prevention (CDC) estimates that obesity cost the U.S. economy \$147 billion in 2008 alone. Lack of exercise is shown to contribute to obesity and its many effects, and for this reason experts call for a more active lifestyle. For over a decade, research has suggested that access to parks can help people increase their level of physical activity.⁴⁴ The Trust for Public Land's health benefits analysis measures the collective economic savings realized by residents of Johnson County who use JCPRD parks and trails to exercise.

Many medical problems can result from, or be exacerbated by, physical inactivity. This list of medical problems includes heart disease,⁴⁵ type 2 diabetes, stroke,⁴⁶ mental disorders,⁴⁷ and some forms of cancer.⁴⁸ The CDC recognizes that physical activity helps improve overall health and reduces the risk for chronic diseases. As such, the CDC promotes physical activity guidelines, defining sufficient activity as at least 150 minutes of moderate-intensity activity per week or at least 75 minutes of vigorous-intensity activity per week, along with muscle-strengthening activities at least two days per week.⁴⁹

Based on these guidelines, The Trust for Public Land used the telephone survey (see page 17) to determine how many adults were using the parks at a frequency and intensity that would result in medical care cost savings. In accordance with CDC guidelines, The Trust for Public Land defined vigorous-intensity activities to include running, bicycling, swimming, and using fitness or gymnastics centers. Moderate-intensity activities included walking, hiking, participating in team sports, and nonmotorized boating. The Trust for Public Land did not consider low-heart-rate activities, such as picnicking or wildlife watching, in this analysis. The park users included all engaged in enough physical activity to warrant health care cost savings. While all Johnson County residents who visit JCPRD parks improve their health by visiting, not all residents use these areas to an extent that is sufficient to meet the CDC's physical activity guidelines. This analysis finds that about 16,900 adult residents in Johnson County improve their health to a degree that meets the CDC's physical activity guidelines by using JCPRD parks, exclusively. This number does not include individuals who use JCPRD parks in conjunction with other resources (e.g., private gyms or municipal parks) to participate in adequate levels of physical activity to meet the guidelines.

44 K. E. Powell, L. M. Martin, and P. P. Chowdhury, "Places to Walk: Convenience and Regular Physical Activity" (*American Journal of Public Health* 93, no. 9, 2003, pp. 1519-1521); B. Giles-Corti and R. J. Donovan, "The Relative Influence of Individual, Social, and Physical Environment Determinants of Physical Activity" (*Social Science and Medicine* 54, 2002, pp. 1793-1812).

45 Jacob Sattelmair, Jeremy Pertman, Eric Ding, et al., "Dose Response Between Physical Activity and Risk of Coronary Heart Disease: A Meta-Analysis" (*Circulation, The American Heart Association* 124, 2011, pp. 789-795); Edward Archer and Steven N. Blair, "Physical Activity and the Prevention of Cardiovascular Disease: From Evolution to Epidemiology" (*Progress in Cardiovascular Diseases*, 53, 2011, pp. 387-396).

46 Larissa Roux, Michael Pratt, Tammy O. Tengs, et al., "Cost Effectiveness of Community-Based Physical Activity Interventions" (*American Journal of Preventive Medicine* 35, no. 6, 2008, pp. 578-588).

47 Joshua Hayward, Felice N. Jacka, Elizabeth Waters, and Steven Allender, "Lessons from Obesity Prevention for the Prevention of Mental Disorders: The Primordial Prevention Approach" (*BMC Psychiatry* 14, 2014, p. 254).

48 I-Min Lee, Eric J. Shiroma, Felipe Lobelo, et al., "Impact of Physical Inactivity on the World's Major Non-Communicable Diseases" (*The Lancet* 380, no. 9838, 2012, pp. 219-229).

49 Centers for Disease Control and Prevention, "How Much Physical Activity Do Adults Need?" (accessed January 27, 2015, <http://www.cdc.gov/physicalactivity/everyone/guidelines/adults.html>).

Based on previous work in health care economics, The Trust for Public Land assigned a value of \$1,100 as the annual medical cost savings between those in Johnson County who exercise regularly and those who do not. This value was chosen based on a careful review of health care economics literature that focuses on the cost difference between physically active and inactive persons. The cost savings was based on the National Medical Expenditures Survey and has been widely cited in the literature.⁵⁰ The medical care cost savings were adjusted for inflation and brought to 2014 dollars.⁵¹ For persons over the age of 65, health care cost savings are doubled because seniors typically incur two or more times the medical care costs of younger adults.⁵² This doubling of health care cost savings is conservative. For example, one study found that average health care expenses for adults over 65 were over three times those of working-age people.⁵³

In 2014, the combined health savings from park and trail use for the residents of Johnson County was \$21.2 million (Table 10).

Table 10. Estimated health benefits of physical activity in JCPRD parks (2014)

CATEGORY	
Adults 18–64 Years of Age	
Average annual medical care cost difference between active and inactive persons between 18 and 64 years old	\$1,100
Number of adults (18–64) physically active in parks*	14,600
Subtotal of health care benefits	\$16,100,000
Adults 65 Years of Age and Older	
Average annual medical care cost difference between active and inactive persons over 65 years old	\$2,210
Number of adults (65+) physically active in parks*	2,310
Subtotal of health care benefits	\$5,090,000
Total annual value of health benefits from parks	\$21,200,000
Total adults active in parks*	16,900

* Calculations are based on persons engaging in sufficient levels of moderate and/or vigorous activity in JCPRD parks that meets the CDC's physical activity guidelines.

50 M. Pratt, C. A. Macera, and G. Wang, "Higher Direct Medical Costs Associated with Physical Inactivity" (*Physician and Sportsmedicine* 28, no. 10, 2000, pp. 63–70).

51 The unadjusted medical cost consumer price index was used to account for inflation. U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index for all urban consumers, not seasonally adjusted, U.S. City Average for Medical Care (accessed February 4, 2015, <http://data.bls.gov/pdq/querytool.jsp?survey=cu>).

52 *From Baby Boom to Elder Boom: Providing Health Care for an Aging Population* (Washington, DC: Watson Wyatt Worldwide, 1996).

53 U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, "The High Concentration of U.S. Health Care Expenditures" (accessed September 18, 2013, <http://www.ahrq.gov/research/findings/factsheets/costs/expriach/index.html#HowAre>).

Economic development

Quality of life plays a critical role in Johnson County's economic development because the most sought-after employees in today's economy consider more than salary when choosing places of employment. For example, one survey of high-tech workers found that a job's attractiveness increases by 33 percent in a community with a high quality of life.⁵⁴

Open space amenities, such as those provided by JCPRD, can enhance a community's quality of life. Skilled workers are attracted to places with open space, clean air and water, and diverse opportunities for outdoor recreation. JCPRD, which has a host of parks and trails with beautiful scenery and ample recreational opportunities, makes Johnson County an attractive place to live and work.

Additionally, businesses are drawn to these places to recruit the best workers. This is particularly important in northeastern Kansas, where several high-tech industries — such as aerospace and aviation, agriculture and food production, biotechnology and life sciences, and energy — have been recognized as key industry clusters driving the economy.⁵⁵

Recent analyses suggest that Johnson County is an attractive area for families and businesses. In 2014, the *New York Times* ranked Johnson County as the 11th easiest place to live in the U.S.,



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The Theatre in the Park

54 Garry Sears and Daniela De Cecco, "High-Tech Labour Survey: Attracting and Retaining High-Tech Workers" (*KPMG and CATA Alliance*, June 5, 1998).

55 BusinessClimate.com, "Top Industries" (accessed January 27, 2015, <http://businessclimate.com/kansas-economic-development/top-industries>).

based on education, employment, wealth, and health factors.⁵⁶ Johnson County has also been identified as affordable and family-friendly, bolstering the area's attractiveness to potential employees.⁵⁷ Additionally, Johnson County was recently named the healthiest county in Kansas for the second year in a row. The ranking, released by the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, is based on 29 factors, including economic factors (e.g., unemployment), physical environment factors (e.g., particulate matter air pollution), and health factors (e.g., physical inactivity and exercise opportunities).⁵⁸

Parks and recreational facilities in Johnson County are assets that contribute to these rankings, and their role in economic development is recognized by residents and business leaders. In a recent news article, local officials in Johnson County suggested that the county's amenities — including parks, bike paths, ball fields, and schools — have attracted families and employers to the area.⁵⁹ Top executives are also finding that high-quality communities with open space amenities are attracting talented workers. For example, Sprint CEO Marcelo Claure recently explained that the area's assets are enabling him to attract talent to the company's Overland Park headquarters.⁶⁰

JCPRD enhances the community's quality of life and contributes to economic development in several ways. JCPRD provides parks, recreational facilities, trails, and diverse leisure opportunities. Its open space amenities contain trees and other vegetation that absorb air pollutants. These contributions make the area an appealing place for families, workers, and employers.



JOHNSON COUNTY PARK & RECREATION DISTRICT

Antioch Park

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- 56 Cody Newill, "Johnson County Ranked One of the 'Easiest' Places to Live in U.S." (*Kansas City Public Media*, June 26, 2014, accessed February 10, 2015, <http://kcur.org/post/johnson-county-ranked-one-easiest-places-live-us>).
 - 57 Spencer Tierney, "Best Cities for Young Families in Kansas" (December 1, 2014, accessed February 10, 2014, <http://www.nerdwallet.com/blog/cities/economics/best-cities-for-young-families-in-kansas/>).
 - 58 Robert Wood Johnson Foundation, "County Health Rankings and Roadmaps: Building a Culture of Health, County by County" (accessed February 10, 2015, <http://www.countyhealthrankings.org/app/kansas/2014/rankings/johnson/county/outcomes/overall/snapshot>).
 - 59 Brad Cooper, "Many in Johnson County Say Prosperity Comes from Government Services, Not Tax Cuts" (*The Kansas City Star*, September 27, 2014, accessed September 19, 2014, <http://www.kansascity.com/news/government-politics/article2276603.html>).
 - 60 Diane Stafford, "Sprint CEO Marcelo Claure Says Kansas City's Charms Are Helping Him Recruit Top Managers" (*The Kansas City Star*, November 14, 2014, accessed November 17, 2014, <http://www.kansascity.com/news/business/technology/article3936621.html>).

Conclusion

This study illustrates that JCPRD parks and facilities are key economic drivers that contribute millions annually in economic benefits. They increase the value of nearby residential properties by \$24.1 million, which increases property tax revenues by \$337,000 a year. Additionally, these park areas provide natural goods and services. Specifically, by reducing the amount of stormwater, parks provide a value of \$8.94 million each year. By removing air pollutants that cause damage to structures and endanger human health, the trees and shrubs within JCPRD parks reduce health care costs and lower pollution control costs by \$1.33 million per year.

Further, JCPRD parks and facilities contribute to the tourist economy. Thirty-seven percent of visitors to Johnson County come to visit parks, trails, and recreational facilities, such as those provided by JCPRD. These visitors spend \$524 million annually in the local economy and generate \$31.3 million in state and local taxes each year. A portion of those visitors also come to visit JCPRD facilities specifically. Those visitors generate \$7.37 million in visitor spending.

People who live in Johnson County benefit from JCPRD parks and facilities. Each year residents of Johnson County receive a benefit of \$39.5 million for the direct use of these park facilities. Approximately 16,900 adult residents of Johnson County engage in physical activity at a level sufficient to generate measurable health benefits, yielding annual medical cost savings of \$21.2 million.

JCPRD parks and facilities provide a number of other important economic benefits that cannot be quantified at this time. These include improving quality of life and boosting local economies by attracting businesses and residents. These benefits create substantial and sustained economic value, which unfortunately is extremely difficult to quantify.



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Heritage Park Lake

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Shawnee Mission Park North Trail

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