The economic benefits of parks and recreation in Colorado Springs

THE TRUST FOR PUBLIC LAND

This Trust for Public Land report was completed in partnership with the Colorado Springs Parks, Recreation, and Cultural Services Department, with generous support from Lyda Hill, Colorado Springs Convention and Visitors Bureau, and Downtown Partnership of Colorado Springs.

The Trust for Public Land creates parks and protects land for people, ensuring healthy, livable communities for generations to come.

The Trust for Public Land's Conservation Economics team measures the economic value and fiscal impacts of parks and land conservation. We quantify these impacts using models developed in consultation with leading academics across the country and with our award-winning GIS team.

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The Trust for Public Land

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THE TRUST FOR PUBLIC LAND

COLORADO SPRINGS
OLYMPIC CITY USA

December 6, 2016

Dear City of Colorado Springs Residents:

Colorado Springs is OLYMPIC CITY USA, where a timeless culture of achievement, national pride and dedication sits comfortably alongside awe-inspiring beauty and unparalleled natural training grounds. We are fortunate to live in a city that has the number one city park in the country, The Garden of the Gods Park, as well as Pikes Peak America's Mountain, the second most visited mountain in the world.

Colorado Springs is the 40th largest city in the country and voted by the U.S. News and World Report as the fifth most desirable city to live in the country. We continue to be a military and defense hub, as well as home to the United States Olympic Committee Headquarters, 20+ National Olympic Governing Bodies, more than 50 National Sport Organizations, the Colorado Springs Olympic Training Center and the future home of U.S. Olympic Museum and Hall of Fame.

In 2014, the community created an updated Parks Master Plan that is visionary and focused. The process involved robust citizen input to include numerous stakeholders, focus groups, community meetings, and statistically valid surveys. It was evident that our parks system plays a significant role in contributing to a high quality of life. However, these factors were often considered intangible and difficult to quantify.

The Parks, Recreation and Cultural Services Department worked with the Trust for Public Land and community philanthropist Lyda Hill to produce an economic benefits analysis for our parks system. A special thanks goes to our funding partners: Lyda Hill, the Convention and Visitors Bureau (CVB) and the Downtown Partnership (DTP). This past year, the city engaged numerous stakeholders, businesses, and group leaders to assist with the study. This included data gathering for the analysis, report creation and review. The research provides quantifiable information on the benefits of our park system.

We were pleased to partner with the Trust for Public Land. Their professionalism, national research expertise and work ethic is to be commended. We hope that you will find the report educational and use it as a valuable tool when promoting Colorado Springs as an incredible place to live, work and vacation!

Sincerely,

John Suthers
Mayor

Merv Bennett
City Council President

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Executive summary

The public park and recreation system in Colorado Springs provides substantial economic benefits to the community's residents. The system consists of 9,420 acres of public parkland inside the city and an additional 4,950 acres of city parkland located just outside the city boundary. Colorado Springs parks, trails, open spaces, and facilities include places such as Garden of the Gods, Monument Valley Park, Red Rock Canyon Open Space, the Colorado Springs Pioneers Museum, Meadows Park Community Center, and Starsmore Discovery Center as well as numerous playgrounds, picnic areas, golf courses, dog parks, pools, sports fields, courts, facilities, skateboard parks, disc golf courses, rock-climbing formations, and nearly 150 miles of trails.

Colorado Springs generates numerous economic benefits within the local community by providing parks, trails, open spaces, facilities, and access to an array of free or low-cost recreational activities, such as biking, climbing, exercising, exploring nature, hiking, playing sports, picnicking, running, swimming, walking, and wildlife viewing. Parks, trails, open spaces, and facilities enhance property values, reduce stormwater, filter air pollutants, attract visitors, provide recreational opportunities, improve human health, and boost economic development. They support local jobs, increase spending at local businesses, and create local tax revenue. Specifically, these parks and recreation amenities produce the following economic benefits (Table 1):

- Parks, trails, and open spaces increase the value of nearby residential properties because people enjoy living close to these amenities and are willing to pay for the proximity. Parks in Colorado Springs raise the value of nearby residential properties by $502 million and increase property tax revenues by $2.58 million 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 Colorado Springs provide stormwater infiltration valued at $3.06 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 Colorado Springs by $201,000 per year (see Table 5).
- At least 9 percent of visitors to Colorado Springs come to visit parks, trails, open spaces, and facilities. These visitors are estimated to spend $135 million annually in Colorado Springs and generate $6.36 million in local tax revenues (see Table 6).
- Residents also enjoy Colorado Springs parks, trails, open spaces, and facilities. Each year residents of Colorado Springs receive a benefit of $58.7 million for the recreational use of these parks and recreation facilities (see Table 8).
- Independent research shows that park use translates into increased physical activity, resulting in medical care cost savings. Although all Colorado Springs residents who visit the city's parks, trails, open spaces, and facilities improve their health by visiting, approximately 45,200 adult residents exclusively use Colorado Springs' public park and recreation system to engage in physical activity at a level sufficient to generate measurable health benefits, yielding an annual medical cost savings of $56.5 million (see Table 9).
- Parks, trails, open spaces, and facilities contribute to the high quality of life in Colorado Springs, which plays an important role in attracting business and employees to the city. These park and recreation assets also enhance the robust recreation economy. By providing opportunities for recreation, parks support $32.4 million in resident spending on sports, recreation, and exercise equipment annually. Along with tourist expenditures, this spending supports 88 sporting goods

stores that generate $178 million in sales and provide 986 jobs, further demonstrating that parks, trails, open spaces, and facilities are significant contributors to the Colorado Springs economy.

This study illustrates that parks, trails, open spaces, and facilities in Colorado Springs are key economic drivers that contribute millions annually in economic benefits. Unfortunately, these values cannot be summed into a single figure because each estimate represents a different type of value, with different time frames, accruing to different beneficiaries.

TABLE 1. SUMMARY OF ESTIMATED ECONOMIC BENEFITS PROVIDED BY PARKS, TRAILS, OPEN SPACES, AND FACILITIES[1]

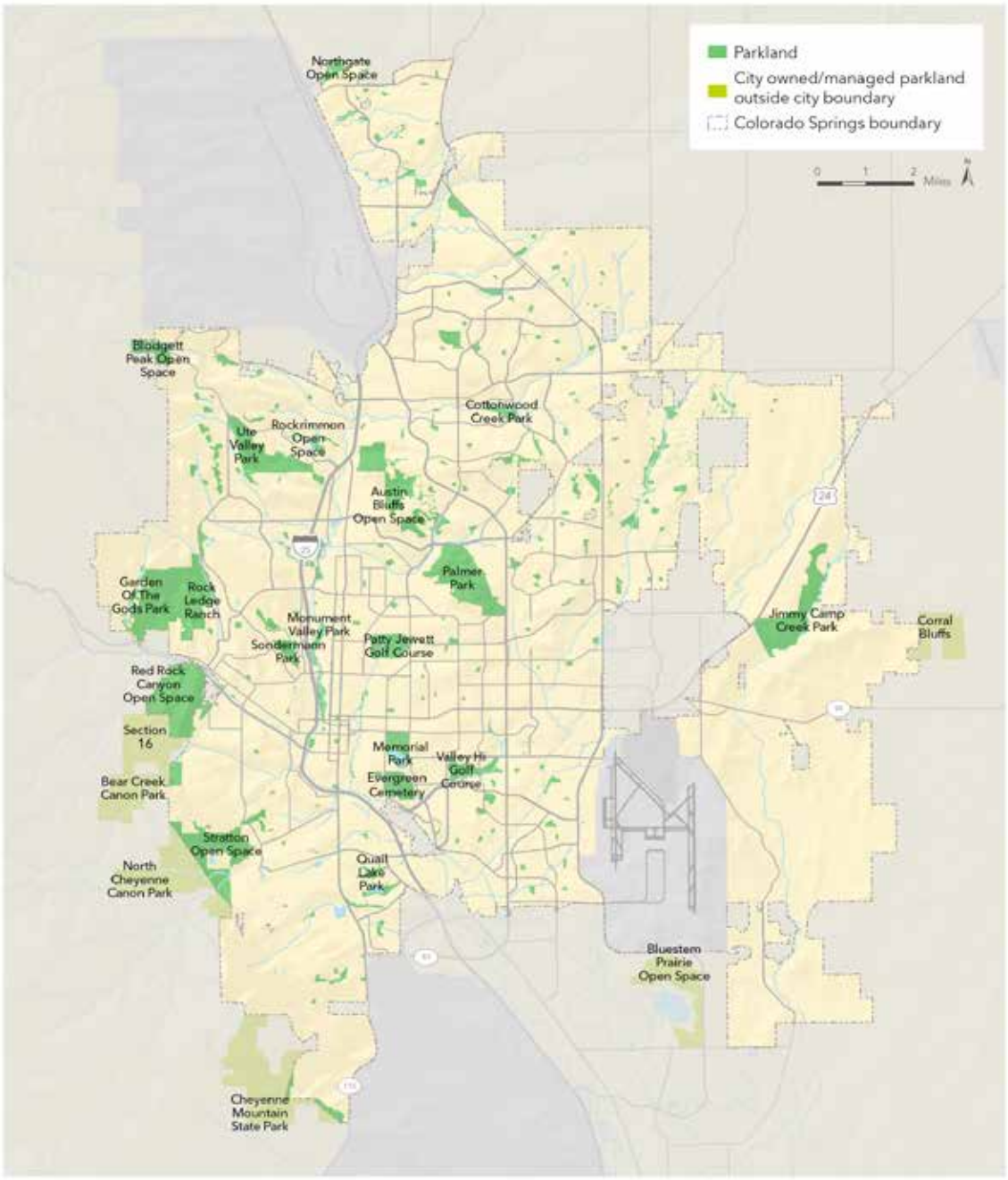
BENEFIT CATEGORY	TOTAL (2016$)
Enhanced property value	
Total additional property value	$502,000,000
Additional annual property tax	$2,580,000
Stormwater infiltration	$3,060,000
Air pollution removal	$201,000
Park tourism	
Total park visitor spending	$135,000,000
Local sales tax on park visitor spending	$ 6,360,000
Recreational use	$58,700,000
Human health	$56,500,000
Economic development*	
Annual spending on sports, recreation, and exercise equipment by residents	$32,400,000
Annual sales generated by sporting goods stores	$178,000,000

* The economic development values presented here are illustrative of the importance of the recreation economy in Colorado Springs. Not all spending and sales in these categories are exclusively generated by parks, trails, open spaces, and facilities; however, these amenities do play an important role in supporting these industries.

For more information about these analyses beyond what is included in each of the following sections, please see the appendices that are available at the end of electronic versions of this report at **www.tpl.org/colorado-springs**.

1 All numbers 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.

EXHIBIT 1. MAP OF THE PARK AND RECREATION SYSTEM IN COLORADO SPRINGS[2]



2 This map shows all of the parks that were included in the data provided by the Colorado Springs Parks, Recreation, and Cultural Services Department in April 2016 and included in the GIS-based analyses. These analyses do not include city-owned parks located outside the city that are managed by another agency, such as portions of Iron Mountain in Manitou Springs, and portions of Cheyenne Mountain State Park, which is managed by Colorado Parks and Wildlife.

Introduction

The public park and recreation system in Colorado Springs provides substantial economic benefits to the community's residents. The system consists of 9,420 acres of public parkland inside the city and an additional 4,950 acres of city parkland located just outside the city boundary. Colorado Springs' parks, trails, open spaces, and facilities include places that are enjoyed by residents and visitors alike. These amenities include places such as Garden of the Gods, Monument Valley Park, Red Rock Canyon Open Space, the Colorado Springs Pioneers Museum, Meadows Park Community Center, and Starsmore Discovery Center as well as numerous playgrounds, picnic areas, golf courses, dog parks, pools, sports fields, courts, facilities, skateboard parks, disc golf courses, rock-climbing formations, and nearly 150 miles of trails.

The founder of Colorado Springs, General William Jackson Palmer, believed in building a community with ample green space, urban forests, and natural scenery. In fact, "General Palmer's plan for a park system was bold, far-sighted and comprehensive. His vision was of a city with near-by parks, mountain driveways, woodland paths, and trails; to furnish places for healthful out-door exercise, and quiet restful enjoyment."[3] Since that time, Colorado Springs endeavored to be a national leader of parks and recreation by cultivating healthy communities through quality programs and dynamic public spaces. The Colorado Springs Parks, Recreation, and Cultural Services Department (PRCS) currently manages over 200 parks and trails, and there are the hundreds of acres in public preserves operated within the city by El Paso County and the State of Colorado. The public park system has won numerous awards over the last five years. For example, Colorado Springs was named no. 5 on the "Best Places to Live" list compiled by *U.S. News & World Report*, which specifically mentions the recreation opportunities offered by the city as well as the "quality schools, parks, and cultural attractions."

By providing park areas and access to an array of outdoor activities, Colorado Springs generates numerous economic benefits within the local community. These benefits include enhanced property value, stormwater infiltration, air pollution removal, tourism, recreational use, health care cost savings, and economic development. Each economic benefit is described in detail and valued in the following pages.

For the purposes of this report, the city's public park system (as shown in the map on page 4) generally consists of all public parkland inside the city regardless of ownership or management,[4] as well as city-owned and city-managed parkland that is located outside the city boundary. For example, the Colorado Springs Parks, Recreation, and Cultural Services Department owns eight parks, or 4,950 acres of parkland, just outside of the city's boundary. These include places such as Corral Bluffs and North Cheyenne Canyon Park. This analysis does not include city-owned parks located outside the city that are managed by another agency, such as portions of Iron Mountain in Manitou Springs and portions of Cheyenne Mountain State Park, which is managed by Colorado Parks and Wildlife. For the enhanced property value, stormwater infiltration, and air pollution removal analyses, parkland parcels of less than 0.5 acres or with less than 0.5 acres of green space were omitted.[5] These omitted parcels generally include sports complexes, visitor centers, and recreation centers, although these amenities are included in the recreation, health, tourism, and economic development sections.

3 Colorado Springs Park Commission, *Report of the Park Commission* (Colorado Springs, Colorado, 1908).

4 This includes parks owned and managed by homeowners associations, which Colorado Springs considers to function the same as other parkland for several reasons, including the fact that people consider them their neighborhood parks, they are not viewed as gaps in the service areas, they are publicly accessible to everyone, and they are generally zoned the same as city parkland. Although there are challenges to creating awareness about these parks, excluding them would be an unfair characterization.

5 The one exception is Boulder Crescent Park, which is a utilized green space that is assumed to enhance nearby property values.

For the recreation, health, and tourism sections we look at all of Colorado Springs' public parks, trails, open spaces, and facilities. Facilities are recreational amenities such as sports complexes, visitor centers, and recreation centers, and are included because of the recreational opportunities they provide, regardless of the amount of green space they offer.

JONATHAN RUEHLEN

Enhanced property value and increased tax revenue

Parks and trails are valued as real estate amenities across the country, and this is evident in Colorado Springs as well. Real estate advertisements that tout these amenities reveal the importance of open space, parks, and trails in Colorado Springs. For example, The Farm, Cordera, and North Fork at Briargate developments combine open spaces, trails, and parks into the community master plans and highlight the inclusion of these amenities in their marketing materials.[6]

Numerous studies have captured the positive impact parks and trails have had on nearby residential property values.[7] One recent study of home sales in El Paso County, Colorado, found that those that were closer to Pike National Forest, Cheyenne Mountain Air Force Station, city open space, and state and county open space sold for a premium.[8] 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 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. Although 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.[9] Therefore, this analysis of enhanced property value has been limited to homes within 500 feet of parks.

The Trust for Public Land identified all homes within 500 feet of parks.[10] A home consists of a residential structure that is owned and taxed; thus, this analysis includes multiple-unit dwellings (e.g., duplexes) and single-family homes.[11] The Trust for Public Land utilized tax assessment data for 2016. In 2016, there were 38,900 homes within the city boundary that were located within 500 feet of parks. These homes had a total market value of $10 billion (2016$), as shown in Table 2.[12]

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

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6 The Farm Colorado, "Community," accessed November 10, 2016, http://thefarmcolorado.com/community/#trails-parks; Cordera, "Cordera Parks and Trails," accessed November 10, 2016, http://cordera.com/parks-and-trails/; North Fork at Briargate, "About North Fork," accessed November 10, 2016, http://northforkbriargate.com/about-north-fork/.

7 Virginia McConnell and Margaret Walls, *The Value of Open Space: Evidence from Studies of Nonmarket Benefits* (Washington, DC: Resources for the Future, 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, no. 4 (2005): 203–218.

8 Charlotte Ham, John B. Loomis, and Patricia Champ, "Relative Economic Values of Open Space Provided by National Forest and Military Lands to Surrounding Communities," *Growth and Change* 1, no. 46 (2015): 81–96.

9 B. Bolitzer and N. R. Netusil, "The Impact of Open Spaces of Property Values in Portland, Oregon," *Journal of Environmental Management* 59, no. 3 (2000): 185–193; John L. Crompton, "The Impact of Parks on Property Values: A Review of the Empirical Evidence," *Journal of Leisure Research* 33, no. 1 (2001): 1–31; Brad Broberg, "Everybody Loves a Park: Green Space Is a Premium When Building, Buying, or Selling," National Association of Realtors, *On Common Ground* (Winter 2009): 20–25; John L. Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base* (Ashburn, VA: National Recreation and Park Association, 2004); Sarah Nicholls and John Crompton, "The Impact of Greenways on Property Values: Evidence from Austin, Texas," *Journal of Leisure Research* 37, no. 3 (2005): 321–341.

10 This analysis includes all public parks with at least 0.5 acre of green space within the Colorado Springs city limits, as well as parks outside the city boundary that are owned by the City of Colorado Springs. It estimates the enhanced property value of homes located within the City of Colorado Springs only; it does not include the value of homes that are located outside Colorado Springs. The parks that are located outside the city boundary but owned by the City of Colorado Springs do not enhance property values of residential parcels within the city by a significant amount. That is, only eight additional homes are captured in the analysis when these parks are included after homes have been selected based on their proximity to parcels within 500 feet of public parks within the city.

11 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.

12 Residential property in Colorado Springs is valued at the market rate by the Office of the El Paso County Assessor. The market rate is the most probable price a home would sell for if placed on the competitive open market. Source: "Office of the El Paso County Assessor," El Paso County, Colorado, accessed October 4, 2016, http://asr.elpasoco.com/Pages/default.aspx.

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. 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 parks on property values.

A conservative value of 5 percent has been assigned as the amount that parks add to the market value of all dwellings within 500 feet. This value takes into consideration lower-quality parks that could potentially decrease property values, as well as high-quality parks that could boost property values by as much as 20 percent.[13] For example, 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).[14] The 5 percent premium is the increase in a home's value due to its proximity to the park system alone. The measurement controls for characteristics of the house as well as other locational characteristics such as proximity to transportation networks and central business districts. Holding all other factors constant, The Trust for Public Land assumes that parks alone increase property values by 5 percent.

This analysis estimates that in 2016 an added $502 million (2016$) in residential property value existed because of proximity to public parks in Colorado Springs and parks just outside the city's boundary that are owned by the City of Colorado Springs (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.[15] As shown in Table 2, the total annual additional property tax revenue derived from public parks in Colorado Springs and parks just outside the city boundary but owned by Colorado Springs is $2.58 million (2016$).[16]

TABLE 2. ENHANCED RESIDENTIAL PROPERTY VALUE DUE TO PROXIMITY TO PUBLIC PARKS IN COLORADO SPRINGS AND PARKS OWNED BY COLORADO SPRINGS BUT LOCATED OUTSIDE THE CITY BOUNDARY (2016$)

CATEGORY	VALUE
Within 500 feet of public parks in Colorado Springs or parks outside city boundary but owned by Colorado Springs	
Number of homes	38,900
Total market value	$10,000,000,000
Additional market value due to parks	$502,000,000
Total property tax revenue due to parks	$2,580,000

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. For example, one study in Portland, Oregon, found that public parks within 1,500 feet increase a home sales price by $2,260 or 3.4 percent of the average home's value.

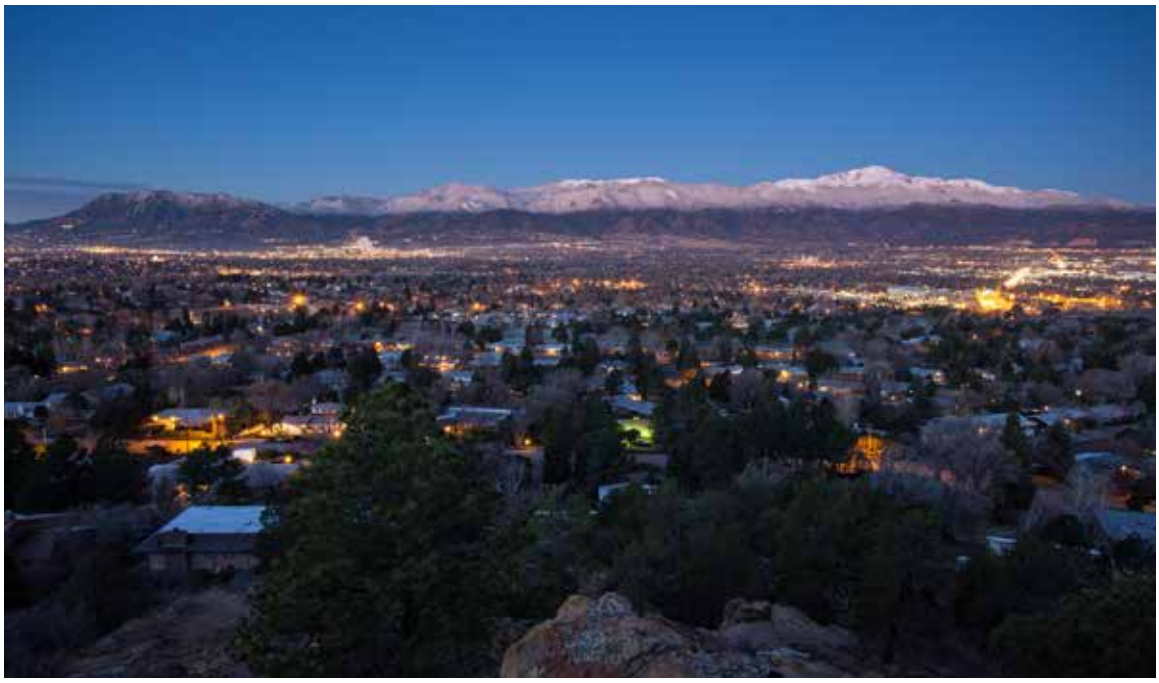
13 Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base*.

14 Broberg, "Everybody Loves a Park: Green Space Is a Premium When Building, Buying, or Selling."

15 Residential property taxes in Colorado Springs are calculated by multiplying the assessed value by the mill rate. The assessed value is the market value multiplied by the residential assessment rate. The residential assessment rate is set by the General Assembly each year and is currently 0.0796. The mill rate is determined by each taxing authority based on revenue needed from the property tax and the total assessed value of real and personal property within the taxing entities jurisdiction. Sources: Colorado Department of Local Affairs, *Residential Assessment Rate*, accessed October 4, 2016, https://www.colorado.gov/pacific/dola/residential-assessment-rate; "Office of the El Paso County Assessor," El Paso County, Colorado.

16 Please see Appendix A, available in electronic copies of the report, for a more thorough description of the methodology used to estimate the enhanced property value and additional property tax revenue attributable to parks. Visit www.tpl.org/colorado-springs.

Other studies have found that value can be measured at distances up to 2,000 feet. Second, these estimates only capture a 5 percent marginal value for parks, though studies have shown higher premiums. One study in Austin, Texas, found that direct adjacency to greenbelts increased average home value by 5.7 or 12.2 percent, depending on the greenbelt. Other studies have found that parks can have up to a 20 percent premium. Therefore, these estimates provide a lower bound estimate of the "true" impact of parks on property values. [17]



JUSTIN PETERSON

17 Bolitzer and Netusil, "The Impact of Open Spaces of Property Values in Portland, Oregon"; Broberg, "Everybody Loves a Park: Green Space Is a Premium When Building, Buying, or Selling"; Nicholls and Crompton, "The Impact of Greenways on Property Values: Evidence from Austin, Texas."

Stormwater infiltration

Stormwater management is an issue for the Colorado Springs community. Rainwater that flows off roads, sidewalks, and other impervious surfaces can cause flooding, erosion, and declines in water quality by carrying pollutants with it. Since Colorado Springs does not treat its stormwater, untreated rainwater can flow directly into waterways, causing significant and costly ecological problems such as algal blooms and undercutting of creek and river banks.

The parks in Colorado Springs 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 storage reservoirs and are the original form of green infrastructure.

The former Western Research Station of the U.S. Forest Service developed a model to estimate the value of stormwater retained by parks. Inputs to the model consist of geographic location, climate region, surface permeability, acres of parkland, land cover, and vegetation types.

First, The Trust for Public Land determined the perviousness of the parks in Colorado Springs using the City's parks and impervious surface layers. Impervious areas consist of roadways, trails, parking areas, buildings, hard courts, and water surfaces. Colorado Springs parks within the city's boundaries are 98 percent permeable and 2 percent impermeable (Table 3).

TABLE 3. ACREAGE AND PERMEABILITY OF PUBLIC PARKS IN COLORADO SPRINGS (2016)

ACRES OF PUBLIC PARKS	ACRES	PERCENT OF AREA
With pervious soil	9,230	98%
With impervious soil	188	2%
Total	9,420	100%

Second, The Trust for Public Land estimated the amount of perviousness of the rest of Colorado Springs (i.e., the city without its parkland) using the same data. The pervious land consists largely of residential front and back yards and private open space areas such as country clubs, public institution grounds, and office campuses. Impervious land includes sidewalks, streets, parking areas, and rooftops. Colorado Springs, without its parkland, is 80 percent permeable and 20 percent impermeable. Therefore, Colorado Springs parks are more permeable than the rest of Colorado Springs.

Third, the University of California, Davis, created a Stormwater Runoff Reduction Model for Colorado Springs. The Stormwater Runoff Reduction Model, which combines aspects of two other models developed by researchers at the Forest Service, uses precipitation data for Colorado Springs to estimate annual runoff. Typically, Colorado Springs receives 19.2 inches of rain per year.[18] The reduction in runoff attributable to parks in Colorado Springs 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 Colorado Springs, but instead the amount of water that is retained by parks above what would be absorbed had the parkland been developed similarly to the rest of Colorado Springs.

18 The model uses real precipitation data from 1990. The selection of which year's precipitation data to use is based on the annual precipitation that is closest to normal with the smallest standard deviation for annual precipitation and for annual air temperature.

The final step in determining the economic value of stormwater infiltration by parks in Colorado Springs is to estimate the cost of managing stormwater with infrastructure (e.g., detention ponds, constructed wetlands, and infiltration basins). It is difficult to estimate the marginal cost of stormwater management because Colorado Springs does not directly treat stormwater. However, Colorado Springs does require treatment of stormwater from new and redevelopment activities.[19] National studies have found that construction and annual maintenance costs for common stormwater best management practices range from $0.04 to $0.83 per cubic foot.[20] 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 infiltration provided by parks. A total annual stormwater value of $3.06 million is estimated for parks in Colorado Springs (Table 4).

This estimate is conservative because the City of Colorado Springs owns parkland outside the city boundary that provides significant stormwater benefits that have not been included in this analysis. Much of the 4,950 acres of city owned parkland outside the city boundary is located on the slopes that surround the Colorado Springs valley and therefore reduce the total amount of stormwater that ends up in the city. The development of these lands would lead to increased stormwater runoff within the city; however, it is difficult to determine the extent and nature of the development that would have occurred on these lands if they were not owned by the City of Colorado Springs. It is likely that some of these lands would be developed to an intensity consistent with the level of development in Colorado Springs; however, some of these lands might not be developed at all. Although The Trust for Public Land did not include these lands in the estimate of the economic benefit because of the uncertainty in determining this likely development intensity, these lands do provide value by infiltrating stormwater.

TABLE 4. ANNUAL STORMWATER COST SAVINGS FROM PUBLIC PARKS IN COLORADO SPRINGS (2016$)

PUBLIC PARKS	INCHES	AMOUNT
Rainfall	19.2	657,000,000 cubic feet
Runoff with parks	0.62	21,200,000 cubic feet
Runoff without parks	2.64	90,400,000 cubic feet
Runoff reduction from parks	2.02	69,100,000 cubic feet
Value of stormwater ($ per cubic foot)		$0.04
Total park stormwater infiltration value		**$3,060,000**

19 Although the City of Colorado Springs does not directly treat its stormwater, it does implement measures to prevent stormwater pollution, including requirements for new and redevelopment projects. There are costs associated with compliance with permit requirements. For example, although developers often implement best management practices (BMPs), both permanent and during construction, management of permanent BMPs often falls to the City—either directly because the City assumes management or indirectly because it is responsible for the enforcement of these BMPs. Unfortunately, the direct local costs of dealing with stormwater were not available at the time of this analysis.

20 City of Overland Park, Kansas, "Overland Park Site BMP Cost Analysis" (prepared by Olsson Associates October 31, 2007); James P. Heaney and Joong G. Lee, "Methods for Optimizing Urban Wet-Weather Control Systems"(prepared for the U.S. Environmental Protection Agency, July 2006); Ada Wossink and Bill Hunt, "The Economics of Structural Stormwater BMPs in North Carolina" (prepared for the Water Resources Research Institute of the University of North Carolina, May 2003); U.S. Environmental Protection Agency, "Preliminary Data Summary of Stormwater Best Management Practices" (August 1999); Chesapeake Research Consortium, "The Economics of Stormwater BMPs in the Mid-Atlantic Region" (August 1997); James P. Heaney, "Costs of Urban Stormwater Control" (prepared for the U.S. Environmental Protection Agency, January 2002).

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.[21] In addition, acid rain, smog, and ozone increase the need to clean and repair buildings and other infrastructure.[22]

Trees and shrubs have the ability to remove pollutants from the air. Leaves absorb gases such as nitrogen dioxide, sulfur dioxide, carbon monoxide, and ozone. Particulate matter (PM), which includes small particles of dust, metals, chemicals, and acids, can also be removed by adhering to plant surfaces.[23] The vegetation in parks plays a role in improving air quality, helping nearby areas avoid the costs associated with pollution.[24]

This study includes an analysis of the air pollution removal benefits that result from public parks within the city limits of Colorado Springs, as well as from city-owned parks located just outside the city limits. The Trust for Public Land included city-owned parks located just outside the city boundary because these parks are provided by the Colorado Springs Parks, Recreation, and Cultural Services Department, and produce benefits for the residents of Colorado Springs despite their location outside the city boundary. These parks provide vegetation that absorbs air pollution and enhances ambient air quality. In fact, the air pollution benefits provided by the City of Colorado Springs' public park system contribute to the nationally recognized air quality of Colorado Springs.[25]

The Northern Research Station of the U.S. Forest Service in Syracuse, New York, designed a calculator for The Trust for Public Land to estimate air pollution removal by park vegetation and the value of pollution removed by this vegetation. This program utilizes the U.S. Forest Service's i-Tree Eco model, which is location-specific, and incorporates factors such as tree canopy, pollution, weather, and U.S. Census data for Colorado Springs.[26]

The Trust for Public Land determined the amount of tree canopy cover in the parks, trails, and open spaces in Colorado Springs using the 2011 National Land Cover Dataset (the most recent data available). Although Colorado Springs has numerous trees on private property as well as on streets,

21 Marilena Kampa and Elias Castanas, "Human Health Effects of Air Pollution, Environmental Pollution," Environmental Pollution 151 (2007): 362–367; Janet Currie, "Pollution and Infant Health," *Child Development Perspectives* 7 (2013): 237–242.

22 R. N. Butlin, "Effects of Air Pollutants on Buildings and Materials," *Proceedings of the Royal Society of Edinburgh. Section B. Biological Sciences* 97 (1990): 255–272; U.S. Environmental Protection Agency, *The Plain English Guide to the Clean Air Act,* EPA-456/K-07-001, Office of Air Quality Planning and Statistics, 2007; American Lung Association, "Health Effects of Ozone and Particle Pollution," accessed September 27, 2016, http://www.lung.org/our-initiatives/healthy-air/sota/health-risks/.

23 Particulate matter includes fine and coarse particles. Fine particles consist of particulate matter less than 2.5 micrometers in diameter and are so small they can be detected only with an electron microscope. Sources include all types of combustion, including motor vehicles, power plants, and residential wood burning. Coarse dust particles consist of particulate matter 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. Source: U.S. Environmental Protection Agency, "Particle Pollution (PM)," accessed September 27, 2016, https://www.airnow.gov/index.cfm?action=aqibasics.particle.

24 David J. Nowak et al., "Modeled $PM_{2.5}$ Removal by Trees in Ten U.S. Cities and Associated Health Effects," *Environmental Pollution* 178 (2013): 395–402.

25 Cable News Network, "Top 10 U.S. Cities with the Cleanest Air," accessed October 4, 2016, http://www.cnn.com/2012/10/23/health/gallery/cleanest-air-cities-2012/index.html?hpt=he_c2; American Lung Association, "State of the Air: Colorado Springs, CO," accessed October 4, 2016, http://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/msas/colorado-springs-co.html#pm24.

26 David J. Nowak et al., "Tree and Forest Effects on Air Quality and Human Health in the United States," *Environmental Pollution* 193 (2014): 119–129.

this study measures only the economic value of trees located on park properties.[27] Tree canopy covers 14 percent of parkland within the city limits, and 31 percent of the parkland outside the city limits.

The i-Tree Eco model processed the tree canopy cover data to estimate hourly changes in annual air pollution removal due to park trees. The model then estimated the value of these changes for each pollutant based on values established by i-Tree researchers, which were primarily related to savings in health care costs. These values were derived from the Environmental Protection Agency's environmental Benefits Mapping and Analysis Program (BenMap) as well as other externality values used in energy decision making developed by a well-cited study. For more information on these values, the i-Tree Eco model, and a more thorough description on the methodology, please see Appendix B. These values were then adjusted to 2016 dollars using the producer price index.[28]

A total value of $201,000 (2016$) in air pollution removal was estimated for public parks in Colorado Springs and city-owned parks located outside the city boundary (Table 5).

TABLE 5. VALUE OF AIR POLLUTION REMOVED BY COLORADO SPRINGS PARKS (2016$)

POLLUTANT	POLLUTION REMOVED (POUNDS)	POLLUTANT REMOVAL VALUE
Carbon monoxide	3,180	$1,040
Nitrogen dioxide	80,300	$7,780
Ozone	179,000	$112,000
Coarse dust particles	60,200	$82,900
Fine particles	4,980	-$3,160*
Sulfur dioxide	9,710	$497
Total	**338,000**	**$201,000**

*In certain cities with climatic characteristics of high wind and low rain, trees can actually increase the annual concentration of $PM_{2.5}$, and therefore lead to a negative pollutant removal value. Trees are a temporary retention site for $PM_{2.5}$. $PM_{2.5}$ intercepted by leaves may be returned to the atmosphere or washed off by rain. In areas with high wind, $PM_{2.5}$ already captured on leaves and not yet washed off may be resuspended at a higher rate than what accumulates annually. Source: Satoshi Hirabayashi, *i-Tree Canopy Air Pollutant Removal and Monetary Value Model Descriptions*, The Davey Institute, 2014, accessed October 4, 2016, https://www.itreetools.org/canopy/resources/i-Tree_Canopy_Air_Pollutant_Removal_and_Monetary_Value_Model_Descriptions.pdf.

27 Although they are outside the scope of this analysis, the street trees in Colorado Springs have been found to provide substantial air quality benefits. A 2012 i-Tree Streets Assessment of Colorado Springs estimated that there are nearly 199,000 street trees in Colorado Springs. These trees provide net annual benefits of $28.9 million. The benefits include reduced energy costs, reduced stormwater runoff, carbon sequestration, carbon storage, and enhanced property value. Source: City of Colorado Springs, *i-Tree Street and Park Assessments*, 2013.

28 U.S. Department of Labor, Bureau of Labor Statistics, *Producer Price Index,* accessed September 27, 2016, www.bls.gov/ppi/.

Tourism

Tourism is important to the economy in Colorado Springs and the Pikes Peak region. The tourism economy that comprises both Colorado Springs and the Pikes Peak region attracted 20.5 million visitors in 2015, including 8.8 million overnight visitors and 11.7 million day visitors. Colorado Springs was the primary destination for most visitors. That is, the city was the only destination for 5.5 million overnight visitors to the region (62 percent) and 7.4 million day visitors (63 percent). About 4 million visitors, or 20 percent of visitors to the greater region, enjoyed both Colorado Springs and the Pikes Peak area as part of their trip.[29]

Outdoor recreation is an important subset of the tourism industry. In fact, visiting a national or state park, hiking or backpacking, and visiting a landmark or historic site were three of the top five activities and experiences reported by overnight visitors to Colorado Springs.[30] Parks, trails, open spaces, and facilities in Colorado Springs play an important role in the economy because they attract tourists and provide opportunities for outdoor and sports–related recreation. These individuals then spend money that supports local employment and provides tax revenue. The Outdoor Industry Association compiles reports on the annual economic impact of outdoor recreation. Although the reports do not analyze the impact of this industry at the city or county level, they provide data for the state that suggests outdoor recreation alone generates $13.2 billion in consumer spending annually, which leads to $994 million in state and local tax revenue. This spending also supports 125,000 direct Colorado jobs with an associated $4.2 billion in wages and salaries.[31]

The recreational opportunities available in the Pikes Peak region enhance the reputation of Colorado Springs as a world-class destination. For example, Garden of the Gods, a city park, is one of the biggest park and outdoor recreation–related tourist attractions.[32] In recent years, Garden of the Gods has been ranked the top U.S. park, the second-best park in the world,[33] and the second of "America's Best Free Attractions."[34]

The park amenities in Colorado Springs also strengthen the city's reputation with working professionals. The Colorado Springs Regional Business Alliance recently conducted a survey of 900 working professionals from outside Colorado to gauge awareness and perceptions of Colorado Springs. The survey found that on a scale of one to ten, respondents, on average, rated recreational amenities as seven in terms of importance. In related focus groups, natural beauty and outdoor recreation were recurring themes.[35]

Tourists visit parks, trails, open spaces, and facilities in Colorado Springs to participate in a wide variety of activities. Though not always recognized, parks and trails play a significant role in the tourism economy of Colorado Springs. Even if tourists use many parks for free, or spend modestly on recreational activities, they end up spending considerable amounts on food, entertainment, lodging, fuel, gifts, and other items during their time in Colorado Springs. Tourist activities, number of visitors, and tourist spending determine the contribution of park amenities to the tourism economy. In Colorado Springs, public parks, trails, open spaces, and facilities are owned and managed by

29 Longwoods International, *Colorado Springs, CO: 2015 Visitor Report*, 2016, provided by the Colorado Springs Convention and Visitors Bureau.

30 Ibid.

31 Outdoor Industry Association, *The Outdoor Recreation Economy: Colorado*.

32 As one of the most popular park and recreation destinations in the world, resident and visitor experiences need to be balanced. In the future, one area that may be considered is automobile traffic in Garden of the Gods Park.

33 TripAdvisor, "TripAdvisor Announces World's Top Landmarks and Parks in Travelers' Choice Attractions Awards," June 17, 2014, accessed July 19, 2016, http://ir.tripadvisor.com/releasedetail.cfm?ReleaseID=854990.

34 Mark Harden, "USA Today: Nation's 2nd-Best Free Attraction Is in Colorado," *Denver Business Journal*, September 2, 2016, accessed October 4, 2016, http://www.bizjournals.com/denver/news/2016/09/02/usa-today-nations-2nd-best-free-attraction-is-in.html.

35 Nathan Landry, communications manager, Colorado Springs Regional Business Alliance, e-mail message to the author, September 15, 2016.

a diverse set of agencies: Colorado Springs Parks, Recreation, and Cultural Services Department; Colorado Parks and Wildlife; El Paso County Parks; and local park groups. Together, these entities provide vast acreage and much programming that bring out of towners to the city; however, data are not available from each entity on visitor numbers or tourist expenditures. Thus, it is not possible to extrapolate the number of visitors to all the public parks, trails, open spaces, and facilities in the city using this approach.

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Nonetheless, The Trust for Public Land utilized information contained in a study conducted by Longwoods International to measure the value of parks, trails, open spaces, and facilities in Colorado Springs' tourism economy.[36] One can get a sense of how much money is spent and how much tax revenue is earned in Colorado Springs due to its parks, trails, open spaces, and 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 Colorado Springs.

Parks, trails, open spaces, and facilities are important components in the local economy. As shown in Table 6, tourists spend $1.49 billion (2016$) in Colorado Springs annually. Nine percent of Colorado Springs visitors cite the outdoors as the primary purpose of their visit.[37] Thus, approximately $135 million (2016$) in spending each year is attributable to the parks that make the outdoors accessible to tourists. Spending by these park-related visitors generates $6.36 million and $3.90 million (2016$) in local and state tax revenues, respectively.[38]

These estimates are conservative because they only include all the spending or tax revenues generated by visitors who come to Colorado Springs for the primary purpose of the outdoors.[39] The

36 Longwoods International is a market research consultancy with a specialization in travel and tourism research.

37 Longwoods International, *Colorado Springs, CO: 2015 Visitor Report,* 2016. Reported figures were for 2015 and were adjusted to 2016 dollars using the unadjusted consumer price index for all goods and all urban consumers. Source: U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Price Index*, accessed October 7, 2016, http://www.bls.gov/cpi/data.htm.

38 This local tax revenue includes the sales taxes collected for the City of Colorado Springs, El Paso County, and the Pikes Peak Rural Transportation Authority within the city limits of Colorado Springs only. Jim Cassidy, chief financial officer, Colorado Springs Convention and Visitors Bureau, e-mail message to author, October 21, 2016.

39 This analysis only estimates the portion of visitor spending and associated tax revenue that is attributable to outdoor recreation and parks; however, in the future, this understanding of tourism impact could be expanded to include employment and industry earnings, as well as a more detailed breakout of spending by type of accommodation and spending by commodity purchase.

estimates do not include spending or tax revenues generated by visitors who come for the primary purpose of visiting facilities or participating in sports-related recreation, such as tournaments. The results of a recent tourism study indicate that 2 percent of day visitors participated in sports events for adults and 4 percent participated or attended sports events for children. The same study also concluded that 6 percent of overnight and day visitors expressed the primary purpose of attending special events, which include fairs, festivals, or sports events.[40] An illustration of the importance of this visitor segment is the growing popularity of pickleball for residents and tourists. Monument Valley Park includes 13 pickleball courts that are used to host tournaments, such as the 2015 Great Plains Regional Pickleball Tournament, which featured players from seven states and two Canadian provinces, and the 2014 Pikes Peak or Bust Pickleball Tournament, which was estimated to bring approximately $150,000 to the area.[41] This category of visitation could not be included in the analysis because not all of these special events occur on parks and because data were not available to break out this visitation information more specifically.

In addition, PRCS hosted 324 events in parks in 2016. The majority of these events were oriented toward the local community; however, several events each year attract tourist visits. For example, in 2016, Labor Day Lift Off attracted 150,000 participants, an estimated 30,000 of which were visitors from out of town. Other events that are estimated to have drawn tourists to the city include Pikes Peak International Hill Climb, the Pikes Peak Ascent and Marathon, Colorado Springs PrideFest, the Colorado Springs Marathon, Half Marathon, and 5K race, and the Pikes Peak Running Festival.[42]

TABLE 6. 2015 TOURISM SPENDING AND THE OUTDOORS IN COLORADO SPRINGS (2016$)[43]

CATEGORY	2015 (2016$)
Total direct travel spending by visitors to Colorado Springs*	$1,490,000,000
Estimated local tourism tax revenue in Colorado Springs**	$70,700,000
Estimated state tourism tax revenue in Colorado Springs**	$43,300,000
Percentage of tourists whose primary reason to visit Colorado Springs was the outdoors*	9%
Approximate spending of tourists whose primary reason to visit Colorado Springs was parks, trails, open spaces, and facilities	$135,000,000
Approximate local tourism tax revenue attributable to parks and trails	$6,360,000
Approximate state tourism tax revenue attributable to parks and trails	$3,900,000

* Longwoods International, *Colorado Springs, CO: 2015 Visitor Report*, 2016.

** Jim Cassidy, chief financial officer, Colorado Springs Convention and Visitors Bureau, e-mail message to author, October 21, 2016.

40 Longwoods International, *Colorado Springs, CO: 2015 Visitor Report*, 2016.

41 Pikes Peak Pickleball, "About," accessed November 10, 2016, http://pikespeakpickleball.com/about-us/.

42 Carly Kobasiar, special event supervisor, Colorado Springs Parks, Recreation, and Cultural Services, e-mail message to author, August 12, 2016.

43 Reported figures were for 2015 and were adjusted to 2016 dollars using the unadjusted consumer price index for all goods and all urban consumers. Source: U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Price Index*.

Recreational use

In addition to bolstering the tourism economy, public parks, trails, open spaces, and facilities provide substantial economic benefits through their wide use by local residents. Parks, trails, open spaces, and facilities in Colorado Springs provide direct recreational value to residents by providing access to recreational opportunities such as hiking and walking, using playgrounds, picnicking, resting and relaxing, exploring nature, viewing wildlife, running, biking, or playing sports. These diverse recreational opportunities have been recognized by *Outside Magazine*, which recently ranked Colorado Springs the 7th-best big city for active families.[44]

Most recreational uses in public parks, such as those in Colorado Springs, are available at low or no cost to the public, but economists can calculate their value by determining the consumer's "willingness-to-pay" for the same experience in the private marketplace. In other words, if these public amenities were not made available by the public park and recreation system in Colorado Springs, how much would residents have to pay for similar experiences in commercial facilities or venues? Rather than income, the recreational use value represents the amount of money that residents save by not having to pay market rates to indulge in the park activities they enjoy. The value from nonresident park use was excluded from this analysis since it is covered in the tourism section above (see page 14).

To calculate the recreational use value to residents of Colorado Springs, The Trust for Public Land first determined the number of visits to parks, trails, open spaces, and facilities in Colorado Springs through a professionally conducted telephone survey of city residents.[45] Respondents provided information about the frequency and duration of their visitation to parks, trails, open spaces, and facilities in Colorado Springs, as well as detailed information about 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.[46]

The survey was conducted in August 2016 and was statistically representative of Colorado Springs residents with an accuracy level of plus or minus 4.9 percent. The results of the survey indicate that 84.4 percent of adults and 90.0 percent of children have visited parks, trails, open spaces, and facilities in Colorado Springs in the last 12 months. The survey also indicated that the most popular activity for adults was walking or hiking, followed by general park activities,[47] running or jogging, biking, and playing team sports, such as tennis, lacrosse, soccer, or basketball. The most popular activity for children was walking or hiking, followed by general park activities, biking, running, and playing sports. See Table 7 for a listing of the five most popular activities overall. These results are generally consistent with previous research, including park research in Colorado Springs[48] and outdoor recreation statistics for the state.[49]

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44 Emily H. Bratcher, "The 10 Best Big Cities for Active Families," *Outside Magazine*, accessed July 19, 2016, http://www.outsideonline.com/1856871/10-best-big-cities-active-families#slide-7.

45 The survey was conducted of a statistically representative sample of 400 residents of Colorado Springs. The survey instrument was conducted in English and Spanish, surveying 50 percent of respondents via cellular telephones and 50 percent via landline telephones.

46 Please see Appendix C, available in electronic copies of the report, for more information about the survey questionnaire that was used to estimate the recreational use value. Visit www.tpl.org/colorado-springs.

47 General park activities include using playgrounds, picnicking, reading, relaxing, exploring nature, or viewing birds and wildlife.

48 A 2014 City of Colorado Springs Parks, Recreation, and Cultural Services Survey found that 80 percent of respondent households had participated in a department recreation program, 70 percent indicated they had participated in outdoor recreation, and 50 percent indicated they had recreated two to four times per week. Source: City of Colorado Springs, *Park System Master Plan Appendix,* 2014.

49 Statewide statistics compiled by the Outdoor Industry Association indicate that an estimated 65 percent of Colorado adults participate in outdoor recreation. Source: Outdoor Industry Association, *The Outdoor Recreation Economy: Colorado*.

TABLE 7. TOP FIVE ACTIVITIES OF COLORADO SPRINGS RESIDENTS AS DETERMINED BY SELF-REPORTED PARTICIPATION FOR PARKS, TRAILS, OPEN SPACES, AND FACILITIES IN COLORADO SPRINGS (2016)[50]

ACTIVITY	PARTICIPATION (ANNUAL VISITS)		
	ADULTS	CHILDREN	TOTAL
Walking or hiking	6,490,000	1,500,000	7,990,000
General park uses	3,160,000	1,440,000	4,600,000
Run or jog	2,480,000	764,000	3,240,000
Bike	1,620,000	930,000	2,550,000
Play sports	874,000	608,000	1,480,000

To be conservative for the purposes of the recreational use analysis, the self-reported participation data were adjusted to account for overreporting of park use by respondents, as well as for participation in multiple activities during a single visit.[51] Once the participation data were adjusted, The Trust for Public Land assigned dollar values to each park use by each participant in each activity. The methodology applied by The Trust for Public Land was developed using the framework of the Unit Day Value method, which is employed by the U.S. Army Corps of Engineers to count park visits by specific activity, assigning each activity a dollar value.[52] The Trust for Public Land determined the value of recreation activities in Colorado Springs utilizing estimates of outdoor recreation value from Oregon State University's Recreation Use Values Database as well as market rates, if available. Oregon State University's 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 United States and Canada from 1958 to 2006, adjusted to 2010 dollars.[53] In determining which values to use, The Trust for Public Land's economists applied the most conservative and relevant values to Colorado Springs. The Trust for Public Land then adjusted all values to 2016 dollars.[54] The average value per visit of $2.50 is a unique calculation for Colorado Springs residents across all activities engaged in for all park visitors (Table 8).[55]

TABLE 8. ANNUAL ECONOMIC VALUE OF RECREATIONAL USE OF PARKS, TRAILS, OPEN SPACES, AND FACILITIES IN COLORADO SPRINGS BY RESIDENTS (2016$)

	PERSON VISITS	AVERAGE VALUE PER VISIT	VALUE
Total	23,500,000	$2.50	$58,700,000

50 The original participation that individuals reported was adjusted to account for over reporting of park use as well as their participation in multiple activities during a single visit. The numbers included in the table reflect these adjustments.

51 Adjusting for over reporting of park use is consistent with the literature. Source: B. Wyker et al., *Self-Reported and Accelerometer-Measured Physical Activity: A Comparison in New York City*, New York City Department of Health and Mental Hygiene: Epi Research Report, 2013.

52 The unit day values for recreation used by the U.S. Army Corps of Engineers range from $3.91 to $11.70 (2015$) for general park use such as hiking on trails, and from $15.90 to $46.40 (2015$) for specialized activities that require specialized equipment and expertise. Source: Bruce D. Carlson, Memorandum for Planning Community of Practice (Economic Guidance Memorandum, 15-03, Unit Day Values for Recreation for Fiscal Year 2015, U.S. Army Corps of Engineers, October 28, 2014).

53 Oregon State University, *Recreation Use Values Database*, accessed September 1, 2016, http://recvaluation.forestry.oregonstate.edu/database. At the time of this analysis, the 2016 update to the database was not available.

54 This adjustment was made using the Bureau of Labor Statistic's consumer price index, specifically utilizing the annual average index for all urban consumers and all items from the original year and the most current available index for the current year. This analysis utilized the most recent index that was available, August 2016, and used the unadjusted index for all urban consumers for all items. U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Price Index*.

55 This average value per visit was calculated based on the frequency and type of park visits engaged in by residents of Colorado Springs in the past year. It takes into account the diverse types of activities available to Colorado Springs residents, seasonality of park use, individual demand curves for each person for each activity, and varying values of park activity that are attributable to regional differences. Given these factors, it is inappropriate to compare the average value per visit across communities.

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.[56] 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 recreational use valuation does not include uses during seasons in which participation rates drop to low levels – for example, biking, hiking, running, and walking usually drop to lower levels in the colder months of January, February, and December. Therefore, 36-week seasons are used for these activities. For activities for which a fee is charged, such as golfing at a municipal golf course, the per-person fee is subtracted from the imputed value and only the "extra" value is assigned. For example, if playing golf cost $30 at a public golf course in Colorado Springs and $55 at a private country club, the value of the resident's first time playing golf at a public course would be $25.

This analysis finds the recreational use value for Colorado Springs is $58.7 million for 2016 (see Table 8).[57]

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56 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 all 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.

57 This recreational use value represents the value that residents would have to pay to engage in recreational activities if the park did not provide them at low or no cost.

Health care cost savings

In this analysis, The Trust for Public Land measured the collective economic savings realized on an annual basis by residents of Colorado Springs who use parks, trails, open spaces, and facilities in the city to exercise. Several studies have documented the economic burden related to physical inactivity. Recent research has found that physical activity can lead to lower health care costs, fewer chronic diseases, and greater longevity.[58] Nature can also help individuals maintain mental health.[59] Many medical problems can result from, or be exacerbated by, physical inactivity. This list of medical problems includes heart disease,[60] type 2 diabetes, stroke,[61] behavioral health,[62] and some forms of cancer.[63] One report released in August 2009 by the U.S. Centers for Disease Control and Prevention (CDC) estimates that obesity costs the U.S. economy $147 billion in 2008 alone.[64] Lack of exercise is shown to contribute to obesity and its many effects, and for this reason experts call for a more active lifestyle.

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.[65]

Having access to places to walk can help individuals meet recommendations for regular physical activity.[66] Parks have been found to be one of the most commonly reported convenient places for improved physical and mental health, especially if the space is well maintained, safe, and accessible.[67] From a public health perspective, parks provide low-cost, high-yield wellness opportunities.[68]

Based on the CDC's guidelines for physical activity, The Trust for Public Land used the results of a professionally conducted 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.[69] The Trust for Public Land conservatively defines vigorous- and moderate-intensity physical activity according to the

58 Bing Han et al. "How Much Neighborhood Parks Contribute to Local Residents' Physical Activity in the City of Los Angeles: A Meta-Analysis," *Preventive Medicine* 69 (2014): S106–S110.

59 David G. Pearson and Tony Craig, "The Great Outdoors? Exploring the Mental Health Benefits of Natural Environments," *Frontiers in Psychology* 5 (2014): 1178, doi:10.3389/fpsyg.2014.01178; Cecily Maller et al., "Healthy Nature Healthy People: 'Contact with Nature' as an Upstream Health Promotion Intervention for Populations," *Health Promotion International* 21, no. 1 (2006): 45–54; Natasha Gilbert, "Green Space: A Natural High," *Nature* 531 (2016): S56–S57, doi:10.1038/531S56a; K. L. Wolf and K. Flora, "Mental Health and Function—A Literature Review," *Green Cities: Good Health*, University of Washington, College of the Environment, accessed November 7, 2016, https://depts.washington.edu/hhwb/Thm_Mental.html.

60 Jacob Sattelmair et al., "Dose Response Between Physical Activity and Risk of Coronary Heart Disease: A Meta-Analysis," *Circulation* 124, no. 7 (2011): 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, no. 6 (2011): 387–396.

61 Larissa Roux et al., "Cost Effectiveness of Community-Based Physical Activity Interventions," *American Journal of Preventive Medicine* 35, no. 6 (2008): 578–588.

62 Joshua Hayward et al., "Lessons from Obesity Prevention for the Prevention of Mental Disorders: The Primordial Prevention Approach," *BMC Psychiatry* 14 (2014): 254.

63 I-Min Lee et al., "Impact of Physical Inactivity on the World's Major Non-Communicable Diseases," *The Lancet* 380, no. 9838 (2012): 219–229.

64 Centers for Disease Control and Prevention, "Adult Obesity Causes and Consequences," accessed September 16, 2016, http://www.cdc.gov/obesity/adult/causes.html.

65 Centers for Disease Control and Prevention, "How Much Physical Activity Do Adults Need?," accessed September 16, 2016, http://www.cdc.gov/physicalactivity/everyone/guidelines/adults.html.

66 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): 1793–1812.

67 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): 1519–1521.

68 M. A. Barrett and Daphne Miller, "Parks and Health: Aligning Incentives to Create Innovations in Chronic Disease Prevention," *Preventing Chronic Disease* (2014), doi: http://dx.doi.org/10.5888/pcd11.130407.

69 Please see Appendix C, available in electronic copies of the report, for more information about the survey questionnaire that was used to estimate the health care cost savings. Visit www.tpl.org/colorado-springs.

guidelines developed by the CDC.[70] Owing to time constraints, the survey did not include questions regarding the level of intensity at which each respondent participated in each activity. Thus, The Trust for Public Land assumed the lowest level of intensity possible. That is, if the respondent reported bicycling, it was assumed he or she did so at a leisurely pace on level terrain, which qualifies as a moderate activity, rather than bicycling at a brisk pace or on steep uphill terrain. The Trust for Public Land defined vigorous-intensity activities as running or jogging and rock climbing. Moderate-intensity activities included walking, hiking, biking, swimming, playing sports such as tennis, lacrosse, soccer, or basketball, ice skating, skateboarding, and participating in other types of physical activity or exercise such as yoga, Zumba, or dance. The health analysis does not include sedentary or low-heart-rate activities, such as picnicking, wildlife watching, fishing, or golf. In addition, individuals must utilize the parks, trails, open spaces, and facilities in Colorado Springs exclusively to an extent that is sufficient to meet the CDC's physical activity guidelines. This analysis does not include individuals who use private facilities in conjunction with parks to meet the CDC's physical activity thresholds.

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This analysis finds that 45,200 adult residents in Colorado Springs improve their health to a degree that meets the CDC's physical activity guidelines by using parks, trails, open spaces, and facilities in Colorado Springs exclusively.[71]

Based on previous work in health care economics, The Trust for Public Land assigned a value of $1,180 (2016$) as the annual medical cost savings between those in Colorado Springs 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

70 Centers for Disease Control and Prevention, *General Physical Activities Defined by Level of Intensity.*
71 This analysis does not include individuals who use the park system fewer than 52 times per year.

literature.[72] The medical care cost savings were adjusted for inflation and brought to 2016 dollars.[73] 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.[74] 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.[75]

In 2016, the combined health savings gained by residents of Colorado Springs who were physically active in parks, trails, open spaces, and facilities was $56.5 million (Table 9).[76]

These robust findings are consistent with previous work that has focused on the health and physical activity of the community. For example, a recent report asserted that Colorado Springs residents are the least likely to be obese; that is, nationwide the city had the lowest self-reported obesity rates in 2014, with 19.6 percent of respondents indicating obesity.[77] In addition, only 16 percent of El Paso County residents are physically inactive and 94 percent of the county's residents have access to exercise opportunities.[78] Both of these findings support the high level of physical activity that resulted from this analysis by The Trust for Public Land.

TABLE 9. ESTIMATED HEALTH BENEFITS OF PHYSICAL ACTIVITY IN COLORADO SPRINGS PARKS, TRAILS, OPEN SPACES, AND FACILITIES (2016$)

CATEGORY	VALUE
Adults 18–64 years of age	
Number of adults (18–64) physically active in parks*	42,500
Average annual medical care cost difference between active and inactive persons between 18 and 64 years old	$1,180
Subtotal of health care benefits (18–64)	$50,000,000
Adults 65 years of age and older	
Number of adults (65+) physically active in parks*	2,730
Average annual medical care cost difference between active and inactive persons over 65 years old	$2,360
Subtotal of health care benefits (65+)	$6,430,000
Total adults physically active in parks*	**45,200**
Total annual value of health benefits from parks	**$56,500,000**

*Calculations are based on persons using parks, trails, open spaces, and facilities in Colorado Springs exclusively to engage in sufficient levels of moderate and/or vigorous activity that meet the CDC's physical activity guidelines.

72 M. Pratt, C. A. Macera, and G. Wang, "Higher Direct Medical Costs Associated with Physical Inactivity," *Physician and Sportsmedicine* 28, no. 10 (2010): 63–70.

73 The unadjusted medical cost consumer price index was used to account for inflation. Source: 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 September 16, 2016, http://data.bls.gov/.

74 Roland D. McDevitt and Sylvester J. Schieber, *From Baby Boom to Elder Boom: Providing Health Care for an Aging Population* (Washington, DC: Watson Wyatt Worldwide, 1996).

75 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 16, 2016, http://www.ahrq.gov/research/findings/factsheets/costs/expriach/index.html#HowAre.

76 This estimate is conservative because it does not include health care cost savings that result when children use these resources to an extent that makes them healthier; however, it has been shown that parks can increase the physical activity of youth.

77 Rebecca Riffkin, "Colorado Springs Residents Least Likely to Be Obese," Gallup, May 28, 2015, accessed September 20, 2016, http://www.gallup.com/poll/183257/colorado-springs-residents-least-likely-obese.aspx.

78 Robert Wood Johnson Foundation, *County Health Rankings and Roadmaps: El Paso (EP),* accessed September 30, 2016, http://www.countyhealthrankings.org/app/colorado/2016/rankings/el-paso/county/outcomes/overall/snapshot.

Economic development

Parks, trails, open spaces, and facilities in Colorado Springs support economic development significantly.[79] Parks enhance quality of life, provide safe and enjoyable means of transportation to work, school, and other activities, and provide diverse leisure opportunities that are important generators of economic activity attracting talent, employers, and investment to the region.

Quality of life

Quality of life plays a critical role in the region's economic development because the most sought after employees in today's economy consider more than salary when choosing places of employment. For example, focus groups conducted by Carnegie Mellon University have found that young creative workers, particularly those in high-technology fields, consider lifestyle factors, such as environmental and recreational quality, more heavily than the job itself when choosing where to live.[80] A recent survey in Colorado found that business leaders believe public lands and quality of life are inherently linked to and important for the success of the state's businesses. The same survey found that 84 percent of business leaders agree that access to public lands aids in attracting a quality workforce and 67 percent believe that expanding protections and access to public lands helps attract more businesses.[81]

Park amenities, such as those provided by Colorado Springs Parks, Recreation, and Cultural Services Department, enhance the community's quality of life. Skilled workers are attracted to places with high quality of life, which can include parks, clean air and water, diverse opportunities for outdoor recreation, and alternative transportation options. Colorado Springs' parks and trails boast beautiful scenery and ample recreational opportunities that make the area an attractive place to live and work.

Recreation

Parks, trails, open spaces, and facilities in Colorado Springs are utilized for multiple types of activities. These activities generate economic activity and support businesses, including those that sell related equipment. In order to better understand the recreation-related economic activity that occurs in Colorado Springs, The Trust for Public Land utilized information from the Esri Business Analyst tool.[82]

Participation in recreation

Recreation in parks, trails, open spaces, and facilities is important to the residents of Colorado Springs. According to the Esri Business Analyst tool, participation in outdoor recreation activities is prevalent among residents of Colorado Springs.[83] The highest reported activity is walking for exercise at 29.6 percent of households. In addition, the tool estimates that in the last 12 months, greater than 5 percent of households participated in jogging or running (14.7 percent), freshwater fishing (12.2

79 Other sections of this report include cultural amenities, such as the Pioneers Museum, but this section focuses on the economic development opportunities related to parks and recreation. Cultural services are also vital to the public park system in Colorado Springs, and these services provide important economic benefits. For more information on the value these amenities provide to the community, please see Americans for the Arts, *The Economic Impact of Nonprofit Arts and Culture Organizations and Their Audiences in the Pikes Peak Region, CO*, Economic Prosperity IV, 2012.

80 Richard Florida, *Cities and the Creative Class* (New York: Routledge, 2005), accessed August 18, 2016, https://books.google.com/books?id=SDeUAgAAQBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false.

81 Colorado Outdoor Business Alliance, *Colorado Business Survey Findings,* 2016.

82 Esri, "ESRI Business Analyst," accessed August 9, 2016, http://www.esri.com/software/businessanalyst.

83 The data analyzed here are from the Esri's Sports and Leisure Market Potential report and are based upon national propensities to use various products and services, applied to local demographic composition. Usage data were collected by GfK MRI, a leading market research firm, in a nationally representative survey of U.S. households.

percent), hiking (11.6 percent), road bicycling (10.8 percent), and canoeing or kayaking (5.6 percent).[84] The residents of Colorado Springs also participate in recreational activities that are more likely to occur in recreation centers or sports facilities, including fields. For example, Pickleball is also a popular sport in Colorado Springs, and one that continues to grow. The Pikes Peak Pickleball Club has nearly 400 members who play almost daily in the Monument Valley Park Courts.[85] Greater than 5 percent of households participated in swimming (17.8 percent), weight lifting (12.2 percent), aerobics (9.9 percent), basketball (8.2 percent), and yoga (8.0 percent). Individuals who participate in these activities purchase products to enhance their experience, such as exercise clothing, footwear, bicycles, and fishing tackle.[86]

Market potential

The Esri Business Analyst tool also compiles estimates of market potential, and calculates a market potential index (MPI) that measures the relative likelihood that the adults in an area participate in certain activities or exhibit certain consumer behavior or purchasing patterns compared to the U.S. average.[87] The MPI can be used to compare Colorado Springs across communities, including to the national average and the nine cities to which the City compared itself in its recent Park System Master Plan. These comparison cities include Albuquerque, New Mexico; Atlanta, Georgia; Fort Collins, Colorado; Kansas City, Missouri; Mesa, Arizona; Omaha, Nebraska; Portland, Oregon; Tucson, Arizona; and Wichita, Kansas.[88] Being able to compare the city to other communities is important because it allows us to understand the relative demand for recreation services and related products.

The tool estimates that for all activities but freshwater fishing, the market potential in Colorado Springs for outdoor recreation (including backpacking, mountain biking, canoeing or kayaking, road bicycling, hiking, jogging or running, and walking for exercise) is higher than the national potential. The MPIs for recreation center or sport facility activities,[89] with the exception of basketball, are also higher than the national average (Table D1).[90] These data demonstrate how residents of Colorado Springs are more likely to participate in recreational activities and spend money on related gear and equipment.

Recreation expenditures and spending potential

The Esri Business Analyst tool also compiles estimates of recreation expenditures and calculates a spending potential index (SPI) that represents the amount spent for a product or service relative to the national average.[91] As with the market potential index, the SPI can be useful for comparing Colorado Springs to other communities, including to the national average.

Residents of Colorado Springs spend $32.4 million annually on sports, recreation, and exercise

84 These statistics differ from those reported in the recreational use value section beginning on page 17. The data included here are derived from market survey research and are reported at the household level, rather than the individual level. Participation is not limited to the park and recreation system; in fact, participation in some activities is likely to have occurred outside the city boundary (e.g., canoeing or kayaking). Thus, the percentages are not comparable. Outdoor recreation, as defined in this analysis, is conservative compared to the definition of outdoor recreation by the Outdoor Foundation, which defines outdoor recreation to include over 40 activities. Source: Outdoor Foundation, *Outdoor Participation Report*, 2016.

85 Pikes Peak Pickleball, "About."

86 For more detailed information on the public park and recreation system and economic development, please see Appendix D, which is available in electronic copies of the report. Visit www.tpl.org/colorado-springs.

87 The MPI is tabulated to represent a value of 100 as the overall demand for the United States. An MPI of more than 100 represents high demand; a value of less than 100 represents low demand. For example, a MPI of 120 implies that demand is likely to be 20 percent higher than the national average.

88 City of Colorado Springs, *Park System Master Plan*, 2014.

89 Recreation center and sport facility activities for the purposes of this analysis include ice skating, Pilates, softball, volleyball, soccer, baseball, tennis, yoga, basketball, aerobics, weightlifting, and swimming.

90 Esri, *Business Analyst Tool—Sports and Leisure Market Potential,* accessed for the City of Colorado Springs by The Trust for Public Land, August 9, 2016.

91 The SPI is tabulated to represent a value of 100 as the overall spending for the United States. When the SPI is equal to 100 for a specific type of merchandise, consumers are spending at a rate equal to the national average. The SPI is an indicator of what level of discretionary income they are willing to devote to a particular good or service.

equipment. Households spend an average of $183 per year on this category of spending, which includes but is not limited to an average of $73.80 on exercise equipment and gear/game tables, $30.90 on bicycles, $16.90 on camping equipment, $39.20 on hunting and fishing equipment, and $5.62 on winter sports equipment.[92] Esri's Business Analyst tool estimates that spending on sports, recreation, and exercise equipment is lower than the national average, with the exception of bicycles, which is higher than the national average (Table D2). These data demonstrate that annual spending in Colorado Springs on general sports, recreation, and exercise equipment is quite sizable, though not quite as high as the national average. Interestingly, the SPI of 97 for sports, recreation, and exercise equipment is higher in Colorado Springs than in the nine comparison cities. The SPIs in these communities range from 63 in Tucson, Arizona, to 96 in Fort Collins, Colorado (Table D3).[93]

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Local recreation businesses

Residents and tourists support local businesses in the recreation economy. According to Esri's Business Analyst, there are 88 sporting goods stores in Colorado Springs.[94] In Colorado Springs, sporting goods stores include businesses that repair bicycles or sell bicycles, bike parts, bowling apparel, camping equipment, exercise equipment, fishing tackle, golf equipment, guns, hockey equipment, horse furnishings and saddlery, skateboards, skating equipment, skiing equipment, and other retail sporting goods. Together these businesses generate $178 million in sales each year and

92 This spending includes some categories that contain purchases unrelated to the park and recreation system (e.g., game tables) as well as purchases of outdoor recreation–related equipment that might be utilized for activities of limited availability in Colorado Springs (e.g., camping, hunting, and fishing). Although there are limited fishing opportunities within the city (e.g., Quail Lake and Prospect Lake), most of the fishing activity by residents is likely to occur outside the city boundary. However, bicycle sales are a large portion of the total spending on sports, recreation, and exercise equipment, and the public park and recreation system in Colorado Springs offers numerous opportunities for bicycle riding in Red Rock Canyon and Palmer Park, among other places.

93 Esri, *Business Analyst Tool—Recreation Expenditures*, accessed by The Trust for Public Land, August 9, 2016, and September 15, 2016.

94 The number of sporting goods stores was determined based on NAICS code 451110. Sources: U.S. Census Bureau, "Industry Statistics Portal: 2012 NAICS: 451110—Sporting Goods Stores," accessed August 18, 2016, https://www.census.gov/econ/isp/sampler.php?naicscode=451110&naicslevel=6; John Gonzales, "Hunting and Outdoor Recreation," SBDCNet, accessed August 18, 2016, http://www.sbdcnet.org/small-business-research-reports/hunting-and-outdoor-recreation.

employ 986 people.[95] Please see Appendix D for a comparison of the local sporting goods stores in Colorado Springs to the nine comparison cities as well as for information regarding the wholesalers that support these sporting goods stores.

Sporting goods stores in Colorado Springs generate relatively more in sales and support more employees than do sporting goods stores in seven of the nine benchmark cities. The sporting goods stores account for 0.43 percent of the total businesses, 0.32 percent of the total sales volume produced by all businesses, and 0.38 percent of all employees in Colorado Springs. Sales by sporting goods stores (as a proportion of all sales in a community) are higher in Colorado Springs than in seven of the nine comparison cities. That is, the average sales volume generated by sporting goods stores is $146 million; however, relative sales range from 10.3 percentage points higher than in Fort Collins, Colorado, to 211 percentage points higher than in Atlanta, Georgia.[96] The number of employees supported by sporting goods stores (as a proportion of all employees in a community) is similarly higher in Colorado Springs than in seven of the nine comparison cities. Specifically, the average number of employees is 976; however, the relative number of employees ranges from 6.79 percentage points higher than Portland, Oregon, to 287 percentage points higher than Atlanta, Georgia.

Parks, trails, and open spaces in Colorado Springs are utilized for multiple types of activities, including bicycling, birdwatching, hiking, running, and walking, among others. These activities generate economic activity and support businesses, including those that sell related equipment and provide food and drink near the greenway. For example, Criterion Bicycles, an independently owned bike shop that has been in business since 1973, and a sidewalk café that caters to trail users, are strategically located along the Pikes Peak Greenway.

Households

Because individuals who participate in parks- and recreation-related activities are likely to spend money on related purchases, it is essential to understand the types of households that are found in Colorado Springs, the preferences they express, and the spending patterns they exhibit. According to Esri's Tapestry Segmentation tool, several types of households in Colorado Springs are attracted to the diverse amenities provided by the public park and recreation system.

In Style households, the most common tapestry segment in Colorado Springs, are characterized as residents who stay fit by exercising and take trips to hike, golf, and go backpacking. Their median household income is $70,700 and their median net worth is $183,000. Approximately 35,800 residents, or 8.5 percent of Colorado Springs households, fall within the In Style segment. Nationwide, fewer households, approximately 2.3 percent, are characterized within this In Style category.[97] This is a critical segment of the population in Colorado Springs because it represents the largest single market, but also because these residents have high incomes and exhibit preferences that are likely to overlap with the park and recreation amenities available in the city.

Old and Newcomers, the second most common tapestry segment in Colorado Springs, are known to enjoy leisure activities such as exercise by walking and swimming. Their median household income is $44,600 and their median net worth is $23,500. There are approximately 28,200 residents of Colorado Springs who have been identified as Old and Newcomers, accounting for 7.8 percent of all households. This is more than double the national average of approximately 2.3 of U.S. households.[98] Although

95 Removing the bowling apparel stores, these 86 businesses generate $175 million in sales and employ 974 people. Source: Esri, "Business Analyst Tool—All Business Report," accessed for the City of Colorado Springs by The Trust for Public Land, August 9, 2016.

96 Relative sales by sporting goods stores are 13.6 percentage points higher in Wichita than in Colorado Springs and 44.2 percentage points higher in Fort Collins than in Colorado Springs.

97 Esri, *Tapestry Segmentation Reference Guide*; Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile," accessed for the City of Colorado Springs by The Trust for Public Land, September 15, 2016.

98 Ibid.

Old and Newcomers have lower incomes, they may be interested in utilizing the public park and recreation amenities made available within the city, including walking trails, recreation centers, or swimming pools.

Ranking third, *Up and Coming Families* account for approximately 7.5 percent of households in Colorado Springs, compared to 2.2 percent of households nationwide. These households earn above-average incomes, with a median household income of $76,100, and are focused on family- and home-related purchases. Residents in this segment are described as enjoying softball, zoos, or theme parks.[99] These individuals may potentially participate in softball leagues sponsored by PRCS.

Set to Impress households are the fourth most prevalent tapestry segment in Colorado Springs. Nationally, 1.4 percent of households fit into the category; however, in Colorado Springs, Set to Impress accounts for 6.7 percent of households. Residents in the segment have a median household income of $29,000 and many work in food service while they attend college. Their leisure activities include concerts, nightclubs, and zoos.[100] This population segment is always looking for a deal and generally lives in neighborhoods that are easy enough to walk or bike to work. If attracted to recreation-related activities, these individuals may be more likely to choose less expensive options for sports and recreation programming, such as those offered by the park and recreation system at less than standard market rates. This segment may also benefit from opportunities to walk or bike to work on trails and greenways.

The fifth-largest market segment in Colorado Springs is *Bright Young Professionals*, who account for 6.5 percent of households, compared to 2.2 of households nationwide. These are young, educated, working professionals with a median household income of $50,000, which is similar to the national average. Residents in this segment are physically active. Bright Young Professionals also often participate in sports, including backpacking, basketball, football, Pilates, weight lifting, and yoga.[101] The Trust for Public Land estimates that this market segment is vital to the local recreation economy.

Please see Appendix D in electronic copies of the report for more information about these segments and additional segments of the population that are likely to interact with the public park and recreation system.

Alternative transportation

Biking and walking are important modes of transportation that are growing in Colorado Springs. Park and trail amenities can enhance alternative transportation options. The city of Colorado Springs currently has over 100 miles of urban trails, including the 35-mile trail that extends from Palmer Lake to Fountain and ties together the New Santa Fe Regional Trail, Pikes Peak Greenway, and the Fountain Creek Regional Trail.[102] Colorado Springs has been designated as a BFC Silver Community since 2008 by the League of American Bicyclists.[103] A report from the League of American Bicyclists indicates that since 1990, bike commuting has grown by 33.5 percent. In 2014, 0.7 percent of the Colorado Springs population, or 1,430 people, commuted by bike, ranking it 43rd in the top 70 largest cities in the United States.[104] In addition to commuting by bike, trails and greenways can be used by pedestrians walking for transportation. According to the 2014 American Community Survey, 2.2 percent of the

99 Esri, *Tapestry Segmentation Reference Guide*; Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile," accessed for the City of Colorado Springs by The Trust for Public Land, September 15, 2016.

100 Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile," accessed for the City of Colorado Springs by The Trust for Public Land, September 15, 2016; Esri, *Set to Impress*.

101 Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile"; Esri, *Bright Young Professionals*.

102 Colorado Springs, "Trails," accessed September 21, 2016, https://coloradosprings.gov/parks-recreation-and-cultural-services/book/trails.

103 League of American Bicyclists, *2010 Bicycle Friendly America*.

104 League of American Bicyclists, *Where We Ride: Analysis of Bicycle Commuting in American Cities*.

working population walks to work.[105] Of the top 100 most populated urban areas, Colorado Springs had experienced the eighth-largest decline in the proportion of workers commuting by private car or van.[106]

Recently, trail-oriented development has been popping up around the country, as developers recognize that they can leverage a growing interest in active transportation and recreation. Examples include Bici Flats in Des Moines, Iowa; Circa in Indianapolis, Indiana; and MoZaic in Minneapolis, Minnesota. In fact, walkability is a top priority when considering where to live for 50 percent of residents in the United States, and bicycling is one of the fastest-growing forms of transportation in the United States. By incorporating project investments in public active infrastructure, among other features, developers are able to differentiate and add value to their projects.[107] Residential development is taking place near trails and increasing surrounding property values. For example, over $200 million has been invested to construct over 1,200 apartment buildings along Minneapolis's Midtown Greenway.[108] In addition, the value of properties within 500 feet of the Indianapolis Cultural Trail has risen 148 percent since its opening in 2008.[109]

As the data above demonstrate, parks, trails, open spaces, and facilities support economic development opportunities in Colorado Springs. Parks promote enhanced quality of life and offer important recreational opportunities that attract talent, employers, and investment, but also generate spending on related recreational clothing, equipment, and accessories. Finally, parks, trails, and greenways provide alternative transportation options by bolstering the availability of safe and enjoyable routes to school, work, and play.

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105 U.S. Census Bureau, American Community Survey, "Commuting Characteristics by Sex: 2010–2014 American Community Survey 5-Year Estimates," accessed August 18, 2016, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_5YR_S0801&prodType=table.

106 Benjamin Davis and Phineas Baxandall, *Transportation in Transition: A Look at Changing Travel Patterns in American's Biggest Cities*, CoPIRG Foundation and Frontier Group, December 2013.

107 Rachel MacCleery et al., "Active Transportation and Real Estate: The Next Frontier," *Urban Land Institute*.

108 Thomas Fisher, "Streetscapes: Midtown Greenway Spurs Urban Development, Especially in Uptown: How a Bike Path in an Old Railroad Trench Sparked $200 Million in Residential Development in the Heart of Minneapolis. And What Still Needs to Be Done," *Star Tribune*, May 9, 2015, accessed November 10, 2016, http://www.startribune.com/midtown-greenway-spurs-urban-development-especially-in-uptown/303081591.

109 Sue Burow and Jessica Majors, "Reasons to Love the Indianapolis Cultural Trail: A Legacy of Gene and Marilyn Glick," *Indiana University Public Policy Institute*.

Conclusion

Although previous research has focused on the economics of housing, manufacturing, retail, and the arts, until now there has been no comprehensive study in Colorado Springs on the economic contributions of the city's park system. The Trust for Public Land believes that answering this question – "How much value does a city park system bring to a city?" – can be profoundly useful. For the first time, parks can be assigned the kind of numerical underpinning long associated with transportation, trade, residences, and other sectors. Urban analysts will be able to obtain a major piece of missing information about how cities work and how parks fit into the equation. Housing proponents and other urban constituencies will potentially be able to find a new ally in city park advocates. And mayors, city councils, and chambers of commerce may uncover the solid, numerical motivation to strategically acquire parkland in balance with community development projects.

This study illustrates that Colorado Springs parks are key economic drivers that contribute millions annually in economic benefits. As explained above, these parks, trails, open spaces, and facilities increase the value of nearby residential properties by $502 million, which increases property tax revenues by $2.58 million a year.

In addition, these park amenities provide natural goods and services. Specifically, by reducing the amount of stormwater, parks provide a value of $3.06 million each year. By removing air pollutants that cause damage to structures and endanger human health, the trees and shrubs within Colorado Springs parks reduce health care costs and lower pollution control costs by $201,000 per year.

Parks, trails, open spaces, and facilities in Colorado Springs contribute to the tourism economy. Approximately 9 percent of visitors to Colorado Springs come for the purposes of visiting these amenities. These visitors spend $135 million annually in the local economy and generate $6.36 million in local taxes each year.

People who live in Colorado Springs also gain from their parks. Each year residents receive a benefit of $58.7 million from the recreational use of the parks. And approximately 45,200 adult residents of Colorado Springs engage in physical activity at a level sufficient to generate measurable health benefits, yielding annual medical cost savings of $56.5 million.

Finally, the parks, trails, open spaces, and facilities in the city contribute to the high quality of life in Colorado Springs, which plays an important role in attracting business and employees to the city and supporting a robust recreation economy. By providing opportunities for recreation, parks support $32.4 million in resident spending on sports, recreation, and exercise equipment annually, or an average of $183 per household. This spending, along with tourist expenditures, supports 88 sporting goods stores that generate $178 million in sales and provide 986 jobs, further demonstrating that parks, trails, open spaces, and facilities are significant contributors to the Colorado Springs economy.

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Appendix A. Enhanced property value methodology

The methodology for this enhanced property value analysis was developed for The Trust for Public Land by John Crompton of Texas A&M University. In each enhanced property value analysis completed by The Trust for Public Land, the research team combs through the recent and geographically relevant literature to ensure that this methodology is reliable and conservative.

The premise that parks and open space have a positive impact on proximate property values derives from the observation that people frequently are willing to pay a larger amount of money for a home close to these types of areas than they are for a comparable home that is not proximate to such amenities. This observation has been empirically validated in over 30 studies whose results have been reported in the literature.[1] In effect, this represents a "capitalization" of park and open space land into increased property values for proximate landowners. It adopts the mechanism of market pricing to assess the value of parks. This process of capitalization is termed "the proximate principle." Conceptually, it is argued that the competitive market will bid up the value of property just equal to the capitalized value of the benefits that property owners perceive they receive from the presence of the park or open space. Economists refer to this approach as "hedonic pricing." It is a means of inferring the value of a nonmarket resource (e.g., a greenway) from the prices of goods actually traded in the market place (e.g., surrounding residential properties).

An implication of this proximate principle is that impacted homeowners are likely to pay higher property taxes to government entities. The overall tax base can be substantially enhanced by the incremental increase in the amount of taxes paid by each home that is attributable to the presence of the park. If related either to the cost of acquisition and development of a park or open space, or to the annual maintenance and operating expenses, the annual increments of proximate value may be sufficient to meet or exceed either of those costs.

Diversity of proximate impacts

It is important to recognize that some parks and open spaces are more desirable than others as places to live nearby. Some spaces are flat, sterile green fields; others belong to another era and have not changed in design or intended uses, even though the demographics of proximate populations have changed, so they have become irrelevant; others embrace nuisances such as traffic congestion, noise, litter, vandalism, or ball field lights intruding into adjacent residences; others are poorly maintained; others are dispirited, blighted, derelict facilities; and others attract undesirable elements who engage in socially unacceptable behavior. It is unlikely that such parks and open spaces will add proximate value. Indeed, it is likely that in some of these cases they would detract from property values.

Challenges in deriving an estimate of proximate impact

To undertake hedonic studies that calculate the impact of parks and open spaces on property taxes and the property tax base requires a significant number of arm's-length sales transactions within the housing market, detailed attribute data for each parcel, the use of statistical techniques, and a substantial amount of time. It is likely to be impractical for most park agencies to replicate studies of this nature, given their limited budgets and time frames. Nevertheless, many agencies seek a method of applying a valuation to parks that they can adapt for use in their own communities. The approach

1 Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base*; McConnell and Walls, *The Value of Open Space: Evidence from Studies of Nonmarket Benefits*.

offered here is one that can generate a more rudimentary estimate. This is due to the difficulty of interpreting the results of empirical studies and adapting them to parks in different contexts. There are three challenges in making such adaptations.

The first challenge lies in the diversity of areas that are described by the rubric "parks." A park may be a one-tenth-acre brick plaza with minimal planting, subjected to the noise and pollution of a large city center, or it may consist of several million acres of mountainous wilderness in Alaska; even within the 50 largest cities in the United States, parks that are beloved by their residents range in size from the jewel-like 1.7-acre Post Office Square in Boston to the 16,283-acre South Mountain Preserve in Phoenix.[2] A park may be designed for recreational use with multiple floodlit athletic facilities, an array of cultural buildings and large paved parking lots, or a tranquil natural resource oasis with no improvements; or it may be a blighted eyesore or a breathtakingly beautiful spectacle. In short, a park is a nebulous concept that defies standardization. For this reason, it is likely that the proximate impact of selected parks within the same community will be different, and it is unlikely that a selected park in one community will have the same proximate impact of another park in a different context.

A second challenge relates to the nature of the results reported in the empirical studies. It is difficult to directly compare these results because they have been ascertained in a variety of manners and have used a number of different measures of value.[3] Among the variations are the measure of property value, the measure of distance, and the comparison criterion.

Many of the studies, especially those completed before 1980, used assessed valuation rather than sales price as their measure of property value. Assessed values are doubtful surrogates for sales price in these kinds of studies because most tax assessors are unlikely to consider park proximity in their valuations. Assessed valuations tend to be rather gross measures that ignore subtleties like the proximate principle. They also tend to be lower than sales price as tax assessors seek to avoid appeals from homeowners challenging their assessments.

To measure distance from a property to a park, some of the studies used a straight line from the property to the park, whereas others measured the distance people would have to travel along roads or paths to access the park. This latter street network approach is more accurate and has been more frequently used in recent years since the widespread adoption of GIS mapping has made it easier. The distances over which impact was measured also varied from two or three blocks to half-a-mile or more.

Premiums associated with the proximate principle were presented in a variety of forms. Some were presented in absolute terms without a comparison criterion. For example, a study in Leon County, Florida,[4] reported an average premium across the county of $6,015 for homes within 200 feet of a park compared to a similar home outside the influence of the park's proximity. However, the proportionate magnitude of this premium is unclear because the mean value of homes in the area is not reported. If these were $75,000 homes, then the premium would be 8 percent, but if they were $300,000 homes, it would be 2 percent. The absence of an indicator of the proportionate magnitude of the premium makes it impossible to meaningfully transfer these data to other contexts.

The most useful information for transferability purposes is offered by studies such as one Portland, Oregon, example where proportionate property premiums are based on comparisons with similar properties outside the proximate impact area.[5] In other cases, for example, a study in Austin, Texas,

2 Peter Harnik, *Inside City Parks* (Washington, DC: The Urban Land Institute, 2000).

3 Sarah Nicholls, "Does Open Space Pay? Measuring the Impacts of Green Spaces on Property Values and the Property Tax Base" (PhD diss., Texas A&M University, Department of Recreation, Park and Tourism Sciences, 2002).

4 Cape Ann Economics, *Land Values and Open Space—Leon County* (San Francisco: The Trust for Public Land, 2003).

5 Margot Lutzenhiser and Noelwah R. Netusil, "The Effect of Open Spaces on a Home's Sale Price," *Contemporary Economic Policy* 19, no. 3 (2001): 291–298.

the premiums are based on average home prices within the impacted area, which means they are likely to be substantially lower than if the comparison criterion was with like houses outside the impacted area.[6]

A third challenge in identifying a premium value that may be transferable to park sites in other communities from the results of the empirical studies may be termed "the aggregation problem." A number of studies, for example, the Leon County[7] and Portland[8] articles, reported proximate premiums that were derived by averaging the impact across a large number of parks in a jurisdiction. Thus, in the Portland case, the premiums of $1,214 and $10,648 were averages derived from 115 urban parks and 34 natural parks, respectively. It was emphasized in the previous section that there are many situations in which the proximate premium may be negative, reflecting the undesirable nature of the open space. When premiums are derived from averages across multiple parks, it is likely that results will be self-canceling to some extent, since the impacts at individual parks may range from high positive to high negative. From a transferability perspective, premiums derived from case studies of individual parks whose attributes are carefully described are more useful than those derived from averages across multiple parks.

The calculation parameters

The goal for this methodology was to develop a relatively simple formulary approach that could be used to derive an estimate of the proximate premium in a community. It is assumed that there will be electronic access to the assessed values of property assigned by the tax assessor's office and that the community has a GIS mapping system. It was noted earlier that market values are preferred to assessed values, but in some cases only assessed values will be available. If assessed values are used, and assessed values are invariably lower than market values, the resulting estimates should be viewed as "conservative."

The following parameters are suggested as reasonable points of departure for deriving these premiums based on the empirical results reported in the literature.[9]

The area of proximate impact of a park should be limited to 500 feet or three blocks. The empirical results suggest that this is likely to capture almost all the premium from small neighborhood parks and 75 percent of the premium from relatively large parks. The remaining 25 percent is likely to be dissipated over properties between 500 and 2,000 feet. Disregarding this will lead to an underestimate of the proximate impact of large parks, which may be substantial because while the premiums at these distances are relatively low, the number of properties within these parameters is relatively high. However, adopting this 500-foot parameter substantially simplifies the estimation task.

Use all the parks in the city of one-half acre or more. It is not practical to carry out the hedonic analysis for parks of less than one-half acre in size. It is sufficient to note that the final calculation is conservative because it omits the many tiny park fragments that exist in every city.

Based on the literature, good parks are associated with a 15 percent premium. Average parks are associated with a 5 percent premium, and bad parks have a premium of –5 percent.

These premiums may appear low to some readers after reviewing the literature.[10] Several technically strong studies (e.g., Portland,[11] the Barton neighborhood in Austin,[12] and the Dallas–Fort Worth

6 Nicholls and Crompton, "The Impact of Greenways on Property Values: Evidence from Austin, Texas."
7 Cape Ann Economics, *Land Values and Open Space—Leon County.*
8 Lutzenhiser and Netusil, "The Effect of Open Spaces on a Home's Sale Price."
9 Crompton, *The Proximate Principle: The Impact of Parks, Open Space and Water Features on Residential Property Values and the Property Tax Base.*
10 Ibid.
11 Cape Ann Economics, *Land Values and Open Space—Leon County.*
12 Nicholls and Crompton, "The Impact of Greenways on Property Values: Evidence from Austin, Texas."

metroplex[13]) reported premiums in the range of 16 to 22 percent. However, these studies were measuring the impact within the first block immediately adjacent to the park and the premiums declined for properties in the second and third blocks. The proportionate premiums suggested here are averages to be used for all properties within the 500-foot (three-block) radius. Furthermore, the average for all parks is 5 percent.

STEPS IN CALCULATING AN ESTIMATE OF THE IMPACT OF PARKS ON THE PROPERTY TAX BASE

1. Identify all parks of one-half acre or more.
2. Draw a 500-foot buffer around each park.
3. Aggregate the market value of all homes within each of the 500-foot buffers, using data from the Office of the El Paso County Assessor.
4. Aggregate the assessed value of all homes within each of the 500-foot buffers, using data from the Office of the El Paso County Assessor.
5. Apply the percentage premium suggested above (5 percent) to the market value of all homes within each of the 500-foot buffers. This figure represents an estimate of the overall change in property value attributable to the parks examined.
6. Multiply the aggregated premiums calculated in Step 4 by the effective local property tax rates imposed by all taxing entities to estimate the total positive impact of parks on the property tax base.

13 Andrew R. Miller, *Valuing Open Space: Land Economics and Neighborhood Parks* (Cambridge, MA: MIT Center for Real Estate, 2001).

Appendix B. Air pollution removal methodology

The Trust for Public Land calculated the air pollution removal benefits that result from public parks within the city limits of Colorado Springs, as well as the air pollution removal benefits that result from city-owned parks located just outside the city limits. The i-Tree Eco Model was utilized to calculate these benefits, using a version of the model that had been pre-populated for the entire United States by the Northern Research Station of the U.S. Forest Service in Syracuse, New York, for The Trust for Public Land. Included in this appendix is a description of that model as it applies to Colorado Springs.

i-Tree Eco Model and air pollution removal

This program is designed to estimate annual air pollutant removal (tons m^{-2}) and monetary values ($ m^{-2}) for areas in the United States, based on user-supplied information on location and tree cover. The program uses average removal amounts and values per unit of tree cover that were derived on a county basis from i-Tree Eco analyses in the conterminous United States in 2010. For rural/urban areas in each county, three analyses were conducted to determine the effect per unit of tree cover on a county basis: (1) derivation of the total tree cover, evergreen percentage, and leaf area index, (2) estimation of air pollutant removal and concentration changes, and (3) valuation of air pollutant removal using the U.S. Environmental Protection Agency's Environmental Benefits Mapping and Analysis Program (BenMAP). In Colorado Springs, The Trust for Public Land used El Paso County as the input area.

Rural/urban area classification

Urban areas were delimited using 2010 Census data and definitions, while rural areas were defined as all land not classified as urban.[14] For Colorado Springs, this meant parks within the city limits were classified as urban, while parks falling outside the city limits were classified as rural.

Tree parameters

The tree cover inputs for Colorado Springs were derived from 2011 National Land Cover Database (NLCD) tree cover maps (the most recent data available) with an adjustment to help correct for underestimation of tree cover.[15] Percent tree cover classified as evergreen was determined based on evergreen, deciduous, and mixed forest land covers as classified by the NLCD. Maximum leaf area index (LAI) was derived from the level-4 MODIS/Terra global Leaf Area Index product for the 2007 growing season.

Air pollutant removals and concentration changes

Air pollutant removal and concentration change due to dry deposition to trees were estimated on an hourly basis and then summarized for a year with i-Tree Eco. For Colorado Springs, the total tree cover, evergreen percentage, and LAI, as well as the surface weather, upper air, and air pollutant concentration data at the monitoring station closest to the area's geographic center, were used in the analyses. The model draws from a total of 979 weather stations from the National Climatic Data

14 U.S. Department of Commerce, "2010 Census Urban and Rural Classification and Urban Area Criteria," accessed October 18, 2016, http://www.census.gov/geo/reference/ua/urban-rural-2010.html.

15 David Nowak and Eric Greenfield, "Evaluating the National Land Cover Database Tree Canopy and Impervious Cover Estimates Across the Conterminous United States: A Comparison with Photo-Interpreted Estimates," *Environmental Management* 46 (2010): 378–390.

Center, 74 radiosonde stations from the National Oceanic and Atmospheric Administration, and 4,116 air pollutant monitoring stations from the U.S. Environmental Protection Agency's Air Quality System. The $PM_{2.5}$ concentration was subtracted from the PM_{10} concentration to produce an adjusted PM_{10} concentration denoted as PM_{10*} (2.5- to 10-micron particles) to avoid double counting.[16] The minimum and maximum estimates of removal were based on minimum and maximum deposition velocities from the literature.

Air pollutant removal valuation

BenMAP was used to estimate the incidence of adverse health effects and associated monetary values resulting from changes in NO_2, O_3, $PM_{2.5}$, and SO_2 concentrations. The pollutant removal values for CO and PM_{10*} were CO = \$1,470 t^{-1} and PM_{10*} = \$6,910 t^{-1} for urban and CO = \$27 t^{-1} and PM_{10*} = \$126 t^{-1} for rural areas. Urban values for CO and PM_{10*} were estimated using national median externality values[17] adjusted to 2016 values using the producer price index,[18] while rural values were derived from urban values adjusted based on the rural to urban value ratio for all four BenMAP pollutants (NO_2, O_3, $PM_{2.5}$, and SO_2). For each rural and urban area, calculated total removal amount and monetary value are divided by the area's total tree cover to derive the removal amount and monetary value multipliers, respectively.

16 That is, all particulates under 2.5 micrometers are also under 10 micrometers and would be included in PM_{10}, so particulate matter 2.5 micrometers and smaller are subtracted from the total number of PM_{10} and represented at PM_{10*} to represent particulate matter that is between 2.5 and 10 micrometers.

17 F. J. Murray, L. Marsh, and P. A. Bradford, "New York State Energy Plan, Vol. II: Issue Reports," New York State Energy Office, 1994.

18 U.S. Department of Labor, Bureau of Labor Statistics, *Producer Price Index*.

Appendix C. Recreational use and health care cost savings methodology

The analyses of recreational use and health care cost savings were conducted using the results of a professionally conducted survey. The survey of 400 Colorado Springs residents was conducted in August 2016 and was statistically representative with an accuracy level of plus or minus 4.9 percent. The survey instrument was conducted in English and Spanish, surveying 50 percent of respondents via cellular telephones and 50 percent landline telephones.

THE FOLLOWING PAGES CONTAIN THE SURVEY INSTRUMENT THAT WAS IMPLEMENTED IN THE FIELD.

For the purposes of our study, please consider public parks, trails, open spaces, and facilities in the city of Colorado Springs only. These include places such as Monument Valley Park, Red Rock Canyon Open Space, Pioneers Museum, Sertich Ice Center, Garden of the Gods, Palmer Park, Meadows Park Community Center, and your neighborhood park. They do not include private clubs or gyms, school properties, or regular streets.

1. Do you use the public parks, trails, open spaces, and facilities in the city of Colorado Springs?
2. Do you have any children 18 years or under living at home?
3. Does your child use the public parks, trails, open spaces, and facilities in the city of Colorado Springs?
4. How many times in the last 12 months have you used public parks, trails, open spaces, and facilities in the city of Colorado Springs?
5. How many times in the last 12 months has your child used public parks, trails, open spaces, and facilities in the city of Colorado Springs?
6. Approximately how much time do you spend during a typical visit to parks, trails, or recreation centers?

The following series of questions will ask you about your use of public parks and trails in Colorado Springs.

7. During a typical week's time, on how many days do you:
    a. Use playgrounds, picnic, read, relax, explore nature, or view birds and wildlife?
    b. Use dog parks?
    c. Walk or hike on trails, including dog walking?
    d. Run or jog on trails?
    e. Ride a bike?
    f. Swim in a public pool?
    g. Play sports such as tennis, lacrosse, soccer, or basketball?
    h. Do any other types of physical activity or exercise in parks, trails, or facilities not mentioned above, such as yoga, Zumba, or dance?

In the following series of questions, I'm going to ask about your use of public parks and trails in Colorado Springs.

8. During the past twelve (12) months, on how many days did you:
    a. Ice-skate or play inline hockey?

b. Visit a historic or cultural site, such as Pioneers Museum or Starsmore Discovery Center?
c. Go fishing within the city of Colorado Springs?
d. Use community centers such as Meadows Park Community Center?
e. Golf at Patty Jewett or Valley Hi?
f. Use skateboarding facilities?
g. Rock climb?
h. Play disc golf?
i. Attend concerts, festivals, or special events, such as Labor Day Lift Off or the Folk Art Festival?

The following series of questions will ask you about your child's use of public parks and trails in Colorado Springs.

9. During a typical week's time, on how many days does your child:
   a. Use playgrounds, picnic, read, relax, explore nature, or view birds and wildlife?
   b. Use dog parks?
   c. Walk or hike on trails, including dog walking?
   d. Run or jog on trails?
   e. Ride a bike?
   f. Swim in a public pool?
   g. Play sports such as tennis, lacrosse, soccer, or basketball?
   h. Do any other types of physical activity or exercise in parks, trails, or facilities not mentioned above, such as yoga, Zumba, or dance?

In the following series of questions, I'm going to ask about your child's use of public parks and trails in Colorado Springs.

10. During the past twelve (12) months, on how many days did your child:
    a. Ice-skate or play inline hockey?
    b. Visit a historic or cultural site, such as Pioneers Museum or Starsmore Discovery Center?
    c. Go fishing within the city of Colorado Springs?
    d. Use community centers such as Meadows Park Community Center?
    e. Golf at Patty Jewett or Valley Hi?
    f. Use skateboarding facilities?
    g. Rock climb?
    h. Play disc golf?
    i. Attend concerts, festivals, or special events, such as Labor Day Lift Off or the Folk Art Festival?

Demographics

D1. Record gender based on observation.

D2. In what year were you born?

D3. For statistical purposes only, which of these categories best describes your total household income last year:
    a. Less than $10,000
    b. $10,000 to less than $15,000
    c. $15,000 to less than $25,000
    d. $25,000 to less than $35,000
    e. $35,000 to less than $50,000
    f. $50,000 to less than $75,000
    g. $75,000 to less than $100,000

h. $100,000 to less than $150,000
i. $150,000 to less than $200,000
j. $200,000 or more

D4. What is the last year of schooling that you have completed?

D5. And finally, what is your race?
a. White
b. African American or Black
c. Hispanic or Latino
d. Asian or Pacific Islander
e. American Indian or Native American
f. Other

Appendix D. Expanded economic development analysis

Parks, trails, open spaces, and facilities in Colorado Springs support economic development. Parks enhance quality of life, create a health and wellness culture, provide safe and enjoyable means of transportation to work, school, and other activities, and provide diverse leisure opportunities that attract talent, employers, and investment to the region. This section of the report provides additional information about the role park amenities play in economic development beyond what is included in the economic development section of the report that begins on page 23.

Quality of life

Quality of life plays a critical role in the region's economic development because the most sought-after employees in today's economy consider more than salary when choosing places of employment. In addition to the study cited in the economic development section, another survey of high-tech workers found that a job's attractiveness increases by 33 percent in a community with a high quality of life.[19]

High quality of life is particularly important in Colorado Springs, where the Regional Business Alliance celebrates several high-tech industries that are leading the economy due to the workforce, quality of life, and a vibrant business climate. These industries include aerospace and defense, information technology, and medical innovation and technology, among others.[20] In fact, in 2016 Colorado Springs was ranked as the 11th-best city for science, technology, engineering, and math professionals due to a host of factors, including research and development spending, tech-startup density, wages, housing prices, and recreational opportunities.[21]

The city of Colorado Springs is consistently recognized for its high quality of life. For example, Gallup-Healthways ranks communities annually according to their well-being, which includes a community component that considers how much people like where they live. In the 2015 ranking of 190 of communities, Colorado Springs was found to have the 23rd-highest well-being, putting it in the highest 20 percent of all communities included.[22] In 2016, Colorado Springs was ranked as the fourth-best big city in which to live. This ranking was based on a host of factors, such as livability (including recreation), education, health (including obesity and alternative transportation), local economy, and taxes.[23]

Businesses are drawn to places with a high quality of life to recruit the best workers. Companies, particularly those involved with the knowledge economy, are increasingly moving to places with access to nature and outdoor spaces. One article explains that the debates about public lands "often miss this fundamental nexus between beautiful places, quality of life and economic opportunity. Lazy discourse often pegs public lands as a drag on local economies. In reality, they are a boon, luring new companies, top talent and local investment."[24] A study by Headwaters Economics described that in

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

20 Colorado Springs Regional Business Alliance, "Key Industries," accessed August 2, 2016, http://www.coloradospringsbusinessalliance.com/economic-development/key-industries.

21 Richie Bernardo, "2016's Best & Worst Metro Areas for STEM Professionals," WalletHub, January 26, 2016, accessed September 20, 2016, https://wallethub.com/edu/best-worst-metro-areas-for-stem-professionals/9200/#methodology.

22 Gallup and Healthways Inc., *State of American Well-Being: 2015 Community Well-Being Rankings and Access to Care.*

23 Richie Bernardo, "2016's Best Large Cities to Live In," WalletHub, July 11, 2016, accessed September 20, 2016, https://wallethub.com/edu/best-worst-large-cities-to-live-in/14358/#methodology.

24 Lynn Scarlett, "For Today's Companies, Nature Is a Top Recruiter," GreenBiz, accessed September 2, 2015, http://www.greenbiz.com/article/todays-companies-nature-top-recruiter?src=nws8-20.

"today's economy, the bulk of economic value of public lands lies in its ability to attract people – and their businesses – who want to live near protected lands for quality of life reasons."[25]

Recreation

Parks, trails, open spaces, and facilities in Colorado Springs are utilized for multiple types of activities, including biking, exploring nature, hiking, jogging, playing sports, running, viewing birds and wildlife, and walking. These activities generate economic activity and support businesses, including those that sell related equipment. In order to better understand the recreation-related economic activity that occurs in Colorado Springs, The Trust for Public Land utilized information from Esri's Business Analyst tool.

Participation in recreation and market potential

This analysis investigates the role of outdoor recreation and sports recreation in the local economy. Outdoor recreation, as defined in this analysis, is conservative compared to the definition of outdoor recreation by the Outdoor Foundation, which defines outdoor recreation to include over 40 activities.[26]

Table D1 illustrates the participation of Colorado Springs residents in various outdoor recreation and sports recreation activities as well as the market potential index for each activity.

25 Headwaters Economics, *The Economic Benefits of the Land and Water Conservation Fund*, November 2009.

26 The Outdoor Foundation defines outdoor recreation as including adventure racing, backpacking, bicycling (BMX), bicycling (mountain/non-paved surface), bicycling (road/paved surface), birdwatching, boardsailing/windsurfing, car or backyard camping, RV camping, canoeing, climbing (sport/indoor/boulder), climbing (traditional/ice/mountaineering), fly fishing, freshwater fishing, saltwater fishing, hiking, hunting (rifle), hunting (shotgun), hunting (handgun), hunting (bow), kayak fishing, kayaking (recreational), kayaking (sea/touring), kayaking (white water), rafting, running/jogging, sailing, scuba diving, skateboarding, skiing (alpine/downhill), skiing (cross-country), skiing (freestyle), snorkeling, snowboarding, snowshoeing, stand-up paddling, surfing, telemarking (downhill), trail running, triathlon (nontraditional/off road), triathlon (traditional/road), wakeboarding, and wildlife viewing. Source: Outdoor Foundation, *Outdoor Participation Report*, 2016.

TABLE D1. PARTICIPATION IN RECREATION AND MARKET POTENTIAL		
RECREATION ACTIVITY	PERCENT OF HOUSEHOLDS THAT PARTICIPATED IN LAST 12 MONTHS	MARKET POTENTIAL INDEX
Mountain bicycling	4.7	116
Hiking	11.6	116
Backpacking	3.4	115
Jogging/running	14.7	115
Weight lifting	12.2	115
Tennis	4.8	113
Swimming	17.8	112
Yoga	8	112
Aerobics	9.9	111
Road bicycling	10.8	110
Volleyball	3.9	110
Ice skating	2.8	108
Pilates	3	108
Soccer	4.1	108
Softball	3.7	107
Walking for exercise	29.6	106
Canoeing/kayaking	5.6	104
Baseball	4.6	102
Basketball	8.2	99
Freshwater fishing	12.2	99

Recreation expenditures and spending potential

The Esri Business Analyst tool also compiles estimates of recreation expenditures and calculates a spending potential index (SPI) that represents the amount spent for a product or service relative to the national average.[27] As with the market potential index, the SPI can be useful for comparing Colorado Springs to other communities, including to the national average.

Table D2 shows annual household spending on sports, recreation, and exercise equipment as well as the SPI for each subcategory of spending. Table D3 shows the SPI for each of Colorado Springs' comparison cities. These data demonstrate that annual spending in Colorado Springs on general sports, recreation, and exercise equipment is quite sizable, though not quite as high as the national average. Interestingly, the SPI for sports, recreation, and exercise equipment is higher in Colorado Springs than in the nine comparison cities. The SPIs in these communities range from 63 in Tucson, Arizona, to 96 in Fort Collins, Colorado (Table D3).

27 The SPI is tabulated to represent a value of 100 as the overall spending for the United States. When the SPI is equal to 100 for a specific type of merchandise, consumers are spending at a rate equal to the national average. The SPI is an indicator of what level of discretionary income they are willing to devote to a particular good or service.

TABLE D2. ANNUAL HOUSEHOLD SPENDING ON SPORTS, RECREATION, AND EXERCISE EQUIPMENT IN COLORADO SPRINGS			
SPENDING CATEGORY	AVERAGE AMOUNT SPENT PER HOUSEHOLD	SPENDING POTENTIAL INDEX	TOTAL SPENDING
Sports, recreation, and exercise equipment	$183.00	97	$32,400,000
Exercise equipment and gear, game tables	$73.80	96	$13,100,000
Bicycles	$30.90	103	$5,490,000
Camping equipment	$16.90	99	$3,000,000
Hunting and fishing equipment	$39.20	93	$6,960,000
Winter sports equipment	$5.62	94	$998,000
Water sports equipment	$6.05	93	$1,070,000
Other sports equipment	$7.26	91	$1,290,000
Rental and repair of sports, recreation, and exercise equipment	$2.93	96	$520,000

TABLE D3. ANNUAL HOUSEHOLD SPENDING ON SPORTS, RECREATION, AND EXERCISE EQUIPMENT IN COMPARISON CITIES			
CITY	SPENDING POTENTIAL INDEX	AVERAGE AMOUNT SPENT PER HOUSEHOLD	TOTAL SPENDING
Colorado Springs, Colorado	97	$183	$32,400,000
Fort Collins, Colorado	96	$182	$11,300,000
Portland, Oregon	90	$171	$44,300,000
Atlanta, Georgia	89	$168	$32,900,000
Mesa, Arizona	86	$163	$28,400,000
Albuquerque, New Mexico	85	$160	$36,800,000
Omaha, Nebraska	83	$158	$27,500,000
Kansas City, Missouri	80	$151	$29,700,000
Wichita, Kansas	80	$151	$23,400,000
Tucson, Arizona	63	$118	$24,800,000

The Esri Business Analyst tool also estimates the percentages of the population that has spent money on sports and recreation equipment in the last 12 months and estimates the relative likelihood that households in the city of Colorado Springs will spend on this type of equipment compared to the U.S. national average. As shown in Table D4, approximately 21.1 percent of households have purchased sports and recreation equipment in the past year. Approximately 6.3 percent of households in Colorado Springs are estimated to have spent between $1 and $99 on these purchases, 7.3 percent are estimated to have spent between $100 and $249, and 7.5 percent are estimated to have spent over $250. The report also indicates that spending on sports and recreation equipment at these three levels is higher than the national average.

Interestingly, as shown in Table D5, the market potential for spending above $250 is higher in Colorado Springs than in all of the comparison cities. The market potential for spending in the lower ranges is higher for Colorado Springs than for most of the comparison cities, with the exception of Fort Collins. This indicates that Colorado Springs has a high potential for spending on sports and recreation equipment and that a larger proportion of households are likely to spend at least $250 annually on these purchases.

TABLE D4. ANNUAL HOUSEHOLD SPENDING ON SPORTS AND RECREATION EQUIPMENT IN COLORADO SPRINGS		
TYPE OF SPENDING	PERCENT OF HOUSEHOLDS THAT SPENT IN LAST 12 MONTHS	MARKET POTENTIAL INDEX
Sports and recreation equipment, $1–$99	6.3%	105
Sports and recreation equipment, $100–$249	7.3%	112
Sports and recreation equipment, $250+	7.5%	107

TABLE D5. ANNUAL HOUSEHOLD SPENDING ON SPORTS AND RECREATION EQUIPMENT IN COMPARISON CITIES			
CITY	MARKET POTENTIAL INDEX FOR SPORTS AND RECREATION EQUIPMENT SPENDING ($250+)	MARKET POTENTIAL INDEX FOR SPORTS AND RECREATION EQUIPMENT SPENDING ($100–$249)	MARKET POTENTIAL INDEX FOR SPORTS AND RECREATION EQUIPMENT SPENDING ($1–$99)
Colorado Springs, Colorado	107	112	105
Wichita, Kansas	100	106	99
Fort Collins, Colorado	98	118	129
Albuquerque, New Mexico	98	105	104
Omaha, Nebraska	95	104	100
Mesa, Arizona	94	98	99
Portland, Oregon	91	93	104
Kansas City, Missouri	91	96	99
Atlanta, Georgia	89	83	101
Tucson, Arizona	82	100	103

Local recreation businesses

Residents and tourists support local businesses in the recreation economy. According to Esri's Business Analyst, there are 88 sporting goods stores in Colorado Springs.[28] Nationally, sporting goods stores include establishments primarily engaged in retailing new sporting goods, such as bicycles and bicycle parts, camping equipment, exercise and fitness equipment, athletic uniforms, specialty sports footwear, and sporting goods, equipment, and accessories.[29] In Colorado Springs, sporting goods stores include businesses that repair bicycles or sell bicycles, bike parts, bowling apparel, camping equipment, exercise equipment, fishing tackle, golf equipment, guns, hockey equipment, horse furnishings and saddlery, skateboards, skating equipment, skiing equipment, and other retail sporting goods. Together these businesses generate $178 million in sales each year and employ 986 people.[30]

These sporting goods stores generate more in sales and support more employees than do seven of the nine comparison cities on a relative basis. That is, 88 sporting goods stores in Colorado Springs

28 The number of sporting goods stores was determined based on NAICS code 451110. Sources: U.S. Census Bureau, "Industry Statistics Portal: 2012 NAICS: 451110–Sporting Goods Stores"; Gonzales, "Hunting and Outdoor Recreation," SBDCNet.

29 NAICSCode.org, "451110 NAICS–Sporting Goods Stores," accessed August 18, 2016, http://naicscode.org/NAICSCode/451110/Sporting-Goods-Stores.

30 Excluding the bowling apparel stores, these 86 businesses generate $175 million in sales and employ 974 people. Source: Esri, "Business Analyst Tool–All Business Report."

generate $178 million in sales and support 986 employees. These businesses account for 0.43 percent of the total businesses in Colorado Springs. They account for 0.32 percent of the total sales volume produced by all businesses in Colorado Springs and 0.38 percent of all employees in Colorado Springs. Sales by sporting goods stores (as a proportion of all sales in a community) are higher in Colorado Springs than in seven of the nine comparison cities. That is, the average sales volume generated by sporting goods stores is $146 million; however, relative sales range from 10.3 percentage points higher than in Fort Collins, Colorado, to 211 percentage points higher than in Atlanta, Georgia.[31] Employees supported by sporting goods stores (as a proportion of all employees in a community) are similarly higher in Colorado Springs than in seven of the nine comparison cities. Specifically, the average number of employees is 976; however, the relative number of employees ranges from 6.79 percentage points higher than Portland, Oregon, to 287 percentage points higher than Atlanta, Georgia.

There are also 15 businesses in Colorado Springs that support these sporting goods stores. They are classified as sporting and recreational goods and supplies merchant wholesalers. In Colorado Springs these businesses supply wholesale sporting goods, bicycles, golf course equipment, bowling lane equipment, and billiard equipment. They employ 48 employees and have annual sales of $121 million.[32] In contrast to the City's Master Plan list of comparison cities, the sporting and recreational goods and supplies merchant wholesalers in Colorado Springs account for the highest number of wholesalers, in relative and absolute terms. That is, no other city has as many wholesalers, and no other city's economy depends on these wholesalers to the same degree. In relative terms the impact of wholesalers in Colorado Springs economy is between 148 and 570 percent larger when compared to the economies of each of the nine comparison cities.

Households

Esri's Tapestry Segmentation tool allows us to understand the lifestyle choices of households in Colorado Springs, how they spend their free time, and how they behave as consumers.

The tool classifies U.S. residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics and characterizes these households according to their preferences.[33] In Colorado Springs, the top five tapestry segments include *In Style* (8.5 percent), *Old and Newcomers* (7.8 percent), *Up and Coming Families* (7.5 percent), *Set to Impress* (6.7 percent), and *Bright Young Professionals* (6.5 percent). Cumulatively, these market segments account for 37 percent of the Colorado Springs households (Table D6). *Soccer Moms* (5.0 percent), *Front Porches* (5.0 percent), *Young and Restless* (4.6 percent), *Exurbanites* (4.4 percent), and *Metro Fusion* (4.0 percent) make up the next most prevalent market segments, and combined with the top five segments, these account for 60 percent of households (Table D6). Many of these households are described as having interests that involve amenities that are provided by the public parks and recreation system in Colorado Springs (Table D6).

The economic development section described the five most common tapestry segments in detail. The five next most common market segments account for an additional 23 percent of households in Colorado Springs. Soccer Moms (5.0 percent), Front Porches (5.0 percent), Young and Restless (4.6 percent), Exurbanites (4.4 percent), and Metro Fusion (4.0 percent). All of these market segments have characteristics that make them likely supporters of the recreation economy.

31 Relative sales by sporting goods stores are 13.6 percentage points higher in Wichita than in Colorado Springs and 44.2 percentage points higher in Fort Collins than in Colorado Springs.

32 Excluding bowling lanes and billiard equipment, these businesses generate $88.4 million in sales and employ 35 people. Source: Esri, "Business Analyst Tool—All Business Report."

33 Esri, "Esri Tapestry Segmentation," accessed September 26, 2016, http://www.esri.com/landing-pages/tapestry.

- Soccer Moms households are described as being very involved in outdoor activities and sports, such as bicycling, jogging, golfing, boating, and target shooting. These households have an estimated median household income of $84,000.[34]
- Front Porches are characterized as having a median household income of $39,000 and participating in leisure activities including sports.[35]
- Young and Restless households have busy schedules and a median household income of $64,200. They are also characterized as individuals who frequently work out at the gym and participate in sports.[36]
- Exurbanites are characterized as households that are very physically active. They lift weights, do yoga, jog, boat, hike, and kayak. They also play Frisbee, take photos, and go birdwatching. These households have a median household income of $84,500 and are well educated, with approximately three in four people having attended college.[37]
- Metro Fusion households enjoy sports, such as soccer and football, and have a median household income of $33,000.[38]

TABLE D6. ESRI TAPESTRY SEGMENTATION MARKETS IN COLORADO SPRINGS

TAPESTRY SEGMENT	PERCENT OF COLORADO SPRINGS HOUSEHOLDS	CUMULATIVE PERCENT OF COLORADO SPRINGS HOUSEHOLDS	PERCENT OF U.S. HOUSEHOLDS	CUMULATIVE PERCENT OF U.S. HOUSEHOLDS
In Style	8.5	8.5	2.3	2.3
Old and Newcomers	7.8	16.3	2.3	4.6
Up and Coming Families	7.5	23.8	2.2	6.8
Set to Impress	6.7	30.5	1.4	8.2
Bright Young Professionals	6.5	37.0	2.2	10.4
Soccer Moms	5.0	42.0	2.8	13.2
Front Porches	5.0	47.0	1.6	14.8
Young and Restless	4.6	51.6	1.7	16.5
Exurbanites	4.4	56.0	1.9	18.4
Metro Fusion	4.0	60.0	1.4	19.8

34 Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile"; Esri, *Soccer Moms.*
35 Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile"; Esri, *Front Porches.*
36 Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile"; Esri, *Tapestry Segmentation Reference Guide.*
37 *Ibid.*
38 Esri, "Business Analyst Tool—Tapestry Segmentation Area Profile"; Esri, *Metro Fusion.*

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