

**An Economic Impact Analysis
of
Metro Parks, Serving Summit County**



*A report from the
University of Akron*

*In Collaboration with
Lux Research, LLC*



A Study Undertaken for Metro Parks Foundation

MetroParks
Foundation

September 2013

Table of Contents

I.	Executive Summary and Summary Table	3,4
II.	Discussion and Results	5
	a. Property Value	5
	b. Storm Water Management Value	7
	c. Tourism Value	12
	d. Health Benefits Value	17
	e. Value of Natural Ecosystems (Existence Value)	24
	f. Value of Volunteer Services	27
	g. Operations Impacts	29
III.	Conclusion	32
IV.	Annex i: Acknowledgments	34
V.	Annex ii: References	35

Technical Appendices are available for review in a separate document. Anyone wishing to review the technical aspects of these findings may request this information from:

Metro Parks, Serving Summit County,
The University of Akron,
Lux Research, LLC

Executive Summary

Metro Parks, Serving Summit County consists of a regional system of 11,500 acres of natural setting parks, including 14 developed parks and several conservation areas. Metro Parks, Serving Summit County, (herein after, *Metro Parks*), has more than 125 miles of trails, including a section of the Ohio & Erie Canal Towpath, and it facilitates active educational and observational programs. Its activities are funded primarily by a real estate tax¹. The purpose of this study is to conduct an analysis of Metro Parks' economic impact on the local, regional economy of Summit County, Ohio. This study does not attempt to monetize the value that Metro Parks' visitors derive from the pleasure of all-season, recreational use, nor the value of Metro Parks' educational services to children and adults in the community.

This estimate of Metro Parks' impact on Summit County's economy takes into account the following factors: positive effect on property values, additional tax revenue for local governments within Summit County, boost to tourism, health benefits of physical activity, reduced costs of storm water management, value of scarce natural ecosystems, the value of volunteer services, and the impact of Metro Parks' business operations. When considering the findings of this study, it is important to remember that the results are best estimates. Conducting economic impact analyses is not an exact science. Best estimates of values are calculated, in accordance with economic principles, from the data available. They should be considered accurate within an order of magnitude.

The estimated economic impacts from analyzing the eight factors above are shown in Table I. They can be summarized in several categories. Because this study is an economic impact analysis, the estimates for each category should be considered as individual aspects of Metro Parks' multi-faceted value, rather than summed to arrive at a total.

- *Revenue Producing Factors for Summit County Governments*, due to **increased tax revenues** from properties near the Metro Parks is estimated to be \$485,613 for 2012.
- *Cost Saving Factors for Summit County Governments*, due to **reduced costs of storm water management** because of the Metro Parks is estimated to be \$4,933,388 in 2012.

¹<http://www.summitmetroparks.org/getdoc/2786d5c6-db98-436d-90a4-08348d9b070d/AReport-2012.aspx>.

- *Wealth Increasing Factors for Citizens of Summit County*, because of Metro Parks include:
increased out-of-county tourist income by \$2,479,242 to \$3,056,414 annually (from tourists who come to Summit County primarily to visit the Metro Parks) and
increased value of property near Metro Parks by \$41,916,319 for 2012.
- *Cost Savings to Citizens of Summit County* who use the Metro Parks regularly for exercise realize the benefit of improved health in **reduced health care costs** of between \$4,124,117 and \$17,201,179 annually; mean value is \$8,646,773 for 2012.
- *Business (Operations) Impacts* of Metro Parks contribute over \$14 million in **gross economic output**, 288 **jobs**, including 80 **non-Metro Parks jobs**, and \$7.8 million in **earnings** to the economy of Summit County.
- The *Value of Metro Park Volunteers' Services* is estimated to have contributed to savings for Summit County taxpayers that range between \$420,000 and \$840,000 annually.
- For the Citizens of Summit County, a conservative estimate of the *Value of Natural Ecosystems* found in Metro Parks ranges between \$1,257,976 and \$5,058,007, in 2012, for the **existence and maintenance of these scarce natural ecosystems**.

Summary	
Estimated Annual Economic Impact of Metro Parks, Serving Summit County	
Revenue Producing Factors for County Government	
Tax receipts from Increased Property Value	\$485,613
Cost Saving Factors for County Government	
Storm Water Management Value	\$4,933,388
Wealth Increasing Factors for Citizens	
Increased Receipts from Tourism	\$2,479,242 - \$3,056,414
Increased Property Value from Metro Parks	\$41,916,319
Cost Savings to Citizens	
Health Benefits	\$4,124,117 - \$17,201,179
Business (Operations) Impacts	
Gross Economic Output	\$14,110,800
Earnings	\$7,750,500
Jobs	288
Value of Services of Park Volunteers	\$420,000 - \$840,000
Value of Natural Ecosystems (Existence Value)	\$1,257,976 - \$5,058,007

Discussion and Results

Metro Parks consists of a regional system of 11,500 acres of natural setting parks, including 14 developed parks and several conservation areas. Metro Parks has more than 125 miles of trails, including a section of the Ohio Erie Canal Towpath, and it facilitates active educational and observational programs. Its activities are funded primarily by a real estate tax². Metro Parks is considered by many to be an important amenity of the area, but the benefits it provides have not been catalogued and measured. The purpose of this study is to conduct an analysis of Metro Parks' economic impact on the local, regional economy of Summit County, Ohio. However it does not attempt to monetize the value that Metro Parks' visitors derive from the pleasure of all-season, recreational use, nor the value of its educational services to children and adults in the community.

This estimate of Metro Parks' impact on Summit County's economy takes into account the following factors: effect on property values, additional tax revenue for local governments within Summit County, tourism, health benefits, storm water management, existence value, the value of volunteer services, and the impact of Metro Parks' business operations. When considering the findings of this study, it is important to remember that the results are best estimates. Best estimates of values are calculated, in accordance with economic principles, from the data available. They should be considered accurate within an order of magnitude

Property Value

Introduction

People are often willing to pay more money to purchase a home near open, green-space such as parks, like Metro Parks, even though they will not be owners of the nearby space. Numerous studies have shown that parks are legitimate and influential factors in determining the price of nearby real estate. The influence of surrounding landscapes, parks in particular, on the price of residential and commercial property is known as *The Proximate Principle*^{3,4}

²<http://www.summitmetroparks.org/getdoc/2786d5c6-db98-436d-90a4-08348d9b070d/AReport-2012.aspx>.

³ Crompton, John L. *The Proximate Principle: The impact of parks, open space and water features on residential property values and the property tax base*. Second Edition: Ashburn, Virginia: National Recreation and Park Association. 2004. (as cited in Attachment 3:Estimating The Impact Of Parks And Open Space On Property Values And The Property Tax Base from Harnik, Peter and Welle, Ben. *The Economic Benefits of Denver's Park And Recreation System: A Report by The Trust for Public Land's Center for City Park Excellence for the City and County of Denver*. Commissioned and funded by: The City and County of Denver, The Park People, Kaiser Permanente, and The Greenway Foundation of Denver. The Trust For Public Land. Washington, D.C. 2010.

⁴ <http://www.rpts.tamu.edu/faculty/crompton.htm>.

Using this *proximate principle*, the essential factors relating to real estate prices are the property's nearness to the respective park and the positive or negative quality of that park. Those properties closest to the park are most affected, (accounting for 75% of the additional value) according to the literature, with the greatest increase in value occurring within 500 feet of the park and the value added then reducing gradually outward to 2,000 feet. To be conservative, this study only looked at properties within a distance of 500 feet from Metro Parks. Further, we used the lowest premium of 5% (the increase typical of properties more distant from a park, i.e. 2,000 feet) as the estimated factor for property value increases.⁵

Additionally, 'Good' parks, where crime is relatively lower than surrounding areas have a positive impact of 15%. 'Average' parks boost prices by 5%, and 'Bad' parks have a negative impact of (-5)%^{6,7,8} on home prices. To avoid making an over estimation of Metro Parks' influence on property values in Summit County, this study assumes, conservatively, that there is no crime influence-negative or positive- for properties near Metro Parks. Note that the estimate of increases to property value could be higher if these factors were taken into account, because over 86% of Summit County residents have a favorable opinion of the Metro Parks system and the Metro Parks system has a very good reputation for providing a clean, well-kept, and safe environment for all visitors^{9,10}

To calculate property values attributable to the parks, a GIS map of Summit County parcel boundaries was obtained from the county fiscal office. All residential properties in Summit County with any part of the parcel falling within 500 feet of the park boundaries were identified. "Residential" properties were defined as those coded in the fiscal office parcel database as "R" (residential—mostly single family or two-family residential) or "C" (commercial) properties coded as apartments. 7,168 parcels met these criteria.

⁵ Crompton, John L. *The Proximate Principle: The impact of parks, open space and water features on residential property values and the property tax base*. Second Edition: Ashburn, Virginia: National Recreation and Park Association. 2004.

⁶ Crompton, John L. *The Proximate Principle: The impact of parks, open space and water features on residential property values and the property tax base*. Second Edition: Ashburn, Virginia: National Recreation and Park Association. 2004.

⁷ Lutzenhiser, Margot & Netusil, Noelwah R. The effect of open spaces on a home's sale price. *Contemporary Economic Policy* 19(3), 291-298. 2001. (as cited in Attachment 3:Estimating The Impact Of Parks And Open Space On Property Values And The Property Tax Base from Harnik, Peter and Welle, Ben. *The Economic Benefits of Denver's Park And Recreation System: A Report by The Trust for Public Land's Center for City Park Excellence for the City and County of Denver*. Commissioned and funded by: The City and County of Denver, The Park People, Kaiser Permanente, and The Greenway Foundation of Denver. The Trust For Public Land. Washington, D.C. 2010.

⁸ Nicholls, Sarah & Crompton, John L. The impact of greenways on property values: Evidence from Austin, Texas. *Journal of Leisure Research*. (in press). (as cited in Attachment 3:Estimating The Impact Of Parks And Open Space On Property Values And The Property Tax Base from Harnik, Peter and Welle, Ben. *The Economic Benefits of Denver's Park And Recreation System: A Report by The Trust for Public Land's Center for City Park Excellence for the City and County of Denver*. Commissioned and funded by: The City and County of Denver, The Park People, Kaiser Permanente, and The Greenway Foundation of Denver. The Trust For Public Land. Washington, D.C. 2010.

⁹ See CMOR Summit Poll 2013 - Metro Parks final.pdf. in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

¹⁰ See Ex. T.2a. Int Surv.xlsx in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

Results

The sum of the total appraised value (building plus land) for these parcels is \$838,326,370. The 5% of the value assumed to be due to the parcels' nearness to the park is estimated at \$41,916,319. Note that appraised values of property are nearly always less than market value, which again makes this a conservative estimate.

The sum of the property taxes due for these parcels in 2012 is: \$ 9,712,263. Five percent of this value is \$485,613. Thus the aesthetic value of Metro Parks enriches property owners and increases revenue for Summit County.

Table I	
Economic Benefits of Metro Parks to Residential Property Values in Summit County	
Total appraised value (building + land) of all properties within 500 feet of Metro Park boundaries ^{1,2}	\$ 838,326.4
Total appraised value attributable to Metro Parks (5%)	\$41,916,319
Property taxes due in 2012 from properties within 500 feet of Metro Park boundaries ^{1,2}	\$ 9,712,263
Property tax revenue attributable to Metro Parks (5%)	\$485,613
Sources:	
1. GIS layer "Parcels" from Summit County Fiscal Office Geographic Information Systems division, downloaded from http://fiscaloffice.summitoh.net/index.php/geographic-information on 7/3/2013.	
2. CAMA (Computer-Assisted Mass Appraisal) land record data from Summit County Fiscal Office, downloaded from https://fiscaloffice.summitoh.net/index.php/documents-a-forms/viewcategory/10-cama on 7/3/2013. Database updated on 7/1/2013. Metro Parks boundaries information based on personal communication with Metro Parks staff.	

Storm Water Management Value

Introduction

This study examines the value attributable to Metro Parks, due to its effect in reducing both; the quantity and costs associated with managing storm water runoff in Summit County, Ohio. Non-point source pollution and flooding from such runoff cause significant ecological and public health problems as well as damage to private and public property. The problems associated with storm water runoff necessitate mitigation through costly storm water management programs.

Pervious (absorbent) surface areas provided by various types of land cover, which predominate in Metro Parks, reduce the amount of storm water runoff that occurs; as compared to most other areas of Summit County, which tend, generally, to be more developed than Metro Parks and thus have more impervious surfaces, e.g. roads, driveways, and roof bearing structures. The quantity of storm water that “runs off” Metro Parks’ pervious land cover is far less than the runoff that occurs in the more developed areas of Summit County. This reduction in storm water runoff, attributable to Metro Parks, therefore has two positive effects; reduced problems associated with runoff and reduced costs to the county associated with the management of storm water runoff.

This study estimates the value of Metro Parks’ effect on reducing the impacts and costs of managing storm water runoff, as described more fully below. First, the surface area of pervious land cover contained within the boundaries of Metro Parks is measured. Then, that area is divided (by 3,000 square feet) into units called Metro Parks Equivalent Rate Units (MPERUs). Next, each MPERU of Metro Parks’ pervious land cover is assigned a dollar value equivalent to fees charged by the local storm water management utilities, which are based on their assessment of costs associated with managing the runoff from an equivalent area of predominately impervious surfaces-actual Equivalent Rate Units or Equivalent Residential Units (ERUs). Finally, this dollar value is multiplied by the number of MPERUs within Metro Parks, to estimate the value of reduced costs to manage storm water runoff. A more detailed explanation of the model used in making all of these calculations can be found below and in Appendix 2.

Discussion

Estimation of reduction in runoff

To use this model, we compare an estimate of the runoff that occurs from precipitation falling on Metro Parks with an estimate of runoff that would occur if the Metro Parks were developed similarly to surrounding areas. This hypothetical site, which has land cover typical of the county as a whole, serves as the “baseline” against which Metro Parks’ impact is measured.

Precipitation falling was modeled as a “typical” year, using precipitation data from 1989. 1989 was chosen because that year had total precipitation close to the long-term average value for Summit County. Runoff is affected by storm events so the precipitation for that year was divided into individual storm events, where one storm event is separated from the next by at least 24 hours of no recorded precipitation. Total precipitation in 1989 was 36.3 inches.

The amount of runoff from each storm was then calculated, for the Metro Park area and for the baseline. Runoff amounts are based on the area of various land cover types and soil types in the county. The amounts of each land cover type were calculated using Summit County GIS data. Details are given in Appendix 2. Soil types were determined from the SSURGO dataset from the Natural Resources Conservation Service. All soils, it was assumed, are not drained artificially, when the calculation would have been different for artificial drainage.

The model also takes into account the effect of park vegetation in intercepting precipitation before it reaches the ground. This is determined by summing the surface area of the vegetation types (grass/herbaceous, deciduous trees, and coniferous trees) in the park, for both leaf-off and leaf-on conditions. This is then converted into a reduction in the amount of precipitation used in the runoff calculation for the parks. For each storm event, the amount of runoff was calculated, both for the park conditions and for baseline conditions.

Based on these calculations and assumptions, for the typical year there is a reduction in runoff of 1.97 inches, or a percentage reduction of 53.4%. Total park area was calculated as 464,884,499.4 square feet. The reduction in runoff would therefore be equivalent to a reduction of 76,652,955.4 cubic feet (more than 573,403,926 US gallons) of storm water compared to what would be if the Metro Parks land cover were similar to surrounding land cover.

From this, it is evident that Metro Parks land cover is indeed pervious. Unlike impervious surfaces, which increase storm water runoff and associated negative impacts- such as non-point source pollution and flooding- pervious surfaces mitigate the negative effects of storm water runoff.

Estimate of storm water management cost savings

So, how much value can be attributed to Metro Parks' pervious land cover? Managing storm water runoff is a major challenge, which authorities are trying to integrate at the regional level.¹¹ Storm water management utilities typically charge their customers a fee to offset the cost of managing storm water runoff generated by impervious surfaces.

Within regions that have functioning storm water management utilities, owners of property, which is covered, in part, by impervious surfaces, (such as residential property and most commercial property), are commonly charged these fees based upon their property's area expressed as 3,000 square foot units- known as Equivalent Residential Units or Equivalent Rate Units (ERUs). In most cases, property owners are subject to the charge regardless of the mix of pervious and impervious surfaces that make up the surface area of their property. Because of the mitigating effect of pervious surfaces, however, property owners with significant areas of pervious land cover can receive credits to minimize the fee they will be charged for their impervious surface area that is in excess of one ERU. We are assuming, therefore in this study, the equivalency of value for one ERU of land cover- as costly for impervious surfaces and beneficial for pervious surfaces. We have designated the Metro Parks Equivalent Rate Unit (MPERU) to represent 3,000 square feet of Metro Parks' pervious surface area and its associated value.

In the U.S., the average quarterly fee assessed by utilities to manage storm water is \$11; for a single-family home- 1 ERU. This fee "usually covers regulatory and operation and

¹¹ http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/region3_factsheet_funding.pdf.

maintenance costs. Some communities charge as little as \$2 per quarter, while others charge more than \$40 per quarter to a single family home”¹².

In this analysis, each MPERU of pervious land cover is assigned the value of \$3 per month (or \$36 per year), e.g. every 3,000 square feet of Metro Parks pervious land cover is valued at \$36 annually. This amount is used for three important reasons. It assumes a conservative approach for selecting a dollar amount to represent the value of Metro Parks pervious land, compared with the 2008 US quarterly average of \$11 (\$3.67 per month). It is plausible, yet lower than an established local regional monthly rate of \$5.05 (\$60.60 annually) for one ERU, which is currently collected by North East Ohio Regional Sewer District and is actually in effect for some northern parts of Summit County. Finally, \$3 per month is the actual rate proposed for Summit County for one ERU, as recommended by the Summit County Engineer’s Office¹³. Using this locally derived amount, we avoid “transfer of benefit” issues often associated with economic studies that attempt to estimate the value of various ecosystems and other public goods by using data from distant or dissimilar regions.

Results

Metro Parks has a total area of 464,884,499 square feet. Impervious surfaces, including buildings and parking lots make up 9,109,741 square feet of this area and waterways account for another 17,774,686 square feet. The balance, 438,000,072 square feet is pervious land cover. Because the impervious surfaces, including the waterways, do not reduce storm water runoff, (rather, they contribute to it), they would be subject to the \$36 annual fee for every 3000 square feet of surface area. To account for this cost, the square footage of impervious area must also be subtracted from the amount of pervious surface area in order to arrive at the remaining *net pervious* surface area. A detailed explanation of the rationale for this arithmetic follows.

Storm water management utilities will reduce the fee charged to properties with significant impervious surface area (multiple ERUs), if those properties have enough pervious surface areas to offset, or mitigate, the effects of runoff caused by their impervious areas. The storm water management utilities will, in effect give these property owners ERU ‘credits’. In this study we are assuming ERU credits for Metro Parks, as MPERUs, because of its significant pervious surface area.

Based on this idea, before making the calculations for the value of Metro Parks’ pervious land cover, in the context of this study, we actually discount the number of ‘credit’ MPERUs assigned to Metro Parks for its pervious land cover, in effect ‘debiting’ Metro Parks’ MPERU ‘account’, by the amount of Metro Parks’ impervious surface area. The measured amount of pervious surface area, for which Metro Parks is assigned value, is further reduced by an amount equal to its impervious surface area in order to account for

¹² http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/region3_factsheet_funding.pdf.

¹³ <http://www.engineer.co.summit.oh.us/projects-and-initiatives/stormwater-management/stormwater-and-summit-county-townships/348-updated-surface-water-improvement-and-management-program-proposal>.

the need to mitigate the effects of runoff from Metro Parks’ impervious surface area (costs), for which payment must otherwise be made. This final measured amount of pervious area, converted to MPERUs, is the *net pervious* area, for which a *net benefit* can be attributed to Metro Parks.

The net pervious surface area of Metro Parks, to which a net reduction in storm water runoff can be attributed and to which an economic benefit can be ascribed is 411,115,645 square feet. This is the equivalent of 137,039 MPERUs, each valued at \$36 annually. The annual total net value attributable to Metro Parks, because of the ability of Metro Parks’ predominate land cover to reduce the negative impacts of storm water runoff, is \$4,933,388.

Total surface area Metro Parks	464,884,499 sq ft
Impervious surface area Metro Parks (including waterways)	26,884,427 sq ft
Pervious Surface area Metro Parks	438,000,072 sq ft
Net Pervious surface area Metro Parks ¹	411,115,645 sq ft
Effective number of mitigating MPERUs Metro Parks ²	137,039
Equivalent annual value of 1(one) ERU ³ and 1(one) MPERU	\$36
Estimated annual value of Metro Parks⁴	\$4,933,388
<u>Notes:</u>	
1. Net pervious surface area after reducing by amount equal to impervious surface areas. This is done to account for the cost to mitigate Metro Parks’ impervious surface area runoff, by an equal amount of Metro Parks’ pervious surface area. In other words the estimate of Metro Parks’ effective value derived from pervious surface area (MPERU credit) is reduced, in the same manner that storm water management utility customers can have their fees related to impervious surface costs offset by pervious ERU credits.	
2. One ERU (Effective Residential Unit, or Effective Rate Unit, as established by NEORS and proposed by Summit County Engineer’s Office respectively) represents 3,000 square feet of effective impervious surface area. This study designates the MPERU as a comparable unit for measuring the value of Metro Parks’ pervious surface area.	
3. Annual value assigned to one ERU (considered impervious surface area), as proposed by Summit County Engineer’s Office. NEORS currently charges a monthly fee of \$5.05 (\$60.60 annually) to customers for the cost of managing storm water runoff effects associated with one ERU, such as non-point source pollution and flooding. This fee will be increased to \$5.15 each month (\$61.80 annually) for 2014.	
4. Value of Metro Parks is calculated assuming Metro Parks’ pervious surface area reduces storm water runoff and associated costs to the same degree that impervious surface area contributes to these costs. This is an estimate of the value provided by Metro Parks, in terms of savings to Summit County governments through reduced costs of managing storm water runoff.	

Tourism Value

Introduction

The impact of tourism induced by Metro Parks on the local economy of Summit County can be measured. This is accomplished by estimating the average amount of money spent by a Metro Parks induced tourist on a given visit to Summit County, and multiplying that figure by the estimated total number of Metro Parks induced tourist visits each year.

From the various categories of visitors to Metro Parks, only the set of visitors who have traveled to Summit County for the primary purpose of utilizing a Metro Parks facility are considered for this aspect of the study. This group will be referred to as *tourists*. Economists do not include the spending of local residents as we assume that residents would spend their money somewhere else in the county if they did not visit the Metro Parks. It is those that come into the county for the park experience that add to the economic impact of the Metro Parks system.

Discussion

Primary research was used in conjunction with secondary data to estimate the number of tourists using Metro Parks on an annual basis, the total number of tourist visits to Metro Parks, and the average amount of money spent per visit. The primary research consisted of two separate surveys: a License Plate Tally¹⁴ of vehicles at Metro Parks and an Intercept Survey¹⁵ of visitors to Metro Parks. Secondary data were provided by Metro Parks, which consisted of their estimates of the total annual visits to Metro Parks¹⁶ and the Akron/Summit Convention & Visitors Bureau, (herein after, *A/SCVB*). This information was related to local tourism and tourist spending.

The License Plate Tally was used to collect data about the number of vehicles, vehicle state and county registration, the number of passengers in each vehicle, and whether or not the visitors appeared to be exercising¹⁷. The data was collected on ten different dates, from 26 April through 12 May 2013, and at fifteen unique locations within the Metro Parks network. Results of the License Plate Tally are an aggregate of the data collected from 290 vehicles and 465 visitors at twenty-five distinct data collection points¹⁸.

The Intercept Survey was used to collect data from fifteen different locations- fourteen out of sixteen currently developed parks and one of the three developed multi-purpose trails- throughout the Metro Parks network. The Intercept Survey was conducted on

¹⁴ For more information about the License Plate Tally, see Exhibits T.1 and T.1a, T.1b, and T.1c1 – T.1c7 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

¹⁵ For more information about Intercept Survey, see Exhibits T.2 and T.2a in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

¹⁶ See Exhibit T.3 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*. For additional detailed information regarding methodology for collection of data provided by *Metro Parks, Serving Summit County* and *Metro Parks Foundation*, visit http://www.summitmetroparks.org/Neal_Hess, and contact the Chief of Special Projects Office.

¹⁷ For an abbreviated definition of activities that qualified as exercise for inclusion in this study, see instruction note No. 3 of Exhibit T.1b in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

¹⁸ See Exhibits T.1c1-T.1c7 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

seven different days during the period from 30 July through 05 August 2013. The results of the Intercept Survey represent an aggregate of data from 315 respondents at twenty-two distinct data collection points¹⁹. From this data, estimates of aggregate visitor visitation frequency, tourist visitation frequency, and the average amount of money spent by tourists per visit were determined.

It is important to recognize that there are positive and negative factors associated with primary data, which are estimates collected from respondents. The advantage is that they are collected locally from actual Metro Parks visitors. However, respondents may over estimate or under estimate the data, which necessitates the use of ranges when making estimates.

Secondary data collected from Metro Parks provided information about the total number of visits to all Metro Parks facilities. Metro Parks collects and records this data weekly and tabulates it monthly. Metro Parks utilizes standardized automatic counters at parking lot entrances and trailheads to count the number of cars and people entering parking lots and trails, respectively. Volunteers for Metro Parks are stationed at parking lot entrances to count the number of vehicle occupants and at trailheads to corroborate the results of the automatic counters. Observed variations in vehicle occupancy rates for different parks/facilities are reflected, by factoring the number of counted vehicles by the specific vehicle occupancy rate for the site. Total attendance for Metro Parks is calculated from this data²⁰.

Secondary data about local tourism and tourist spending was also collected from A/SCVB²¹. This secondary data serves two purposes. The research team used it as a check against the primary data on spending that was collected by way of the Intercept Survey. In addition, the estimates of individual, Metro Parks' tourist spending per visit, as calculated from the results of the Intercept Survey, were forwarded to A/SCVB for review as a check on accuracy. This information was also shared with a representative from *Ohio Travel Association*, who corroborated our findings, that the dollar amount from the survey data used in this study, indicating the average spend per person per visit, for day-drip visitors, is an appropriate figure²².

Results

A comparable amount of Metro Parks visitors, 18% and 19% respectively, come from outside Summit County according to both surveys. Survey data indicate that Non-Summit County resident visitors come to Metro Parks 43% as often as Summit County residents and represent 332,338 of the 5.2 million annual visits to Metro Parks. This estimated number of visits to Metro Parks by Non-Summit County visitors, i.e. *tourists*, is based on the actual data collected and is used as the baseline for calculating tourist

¹⁹ See Exhibit T.2a in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

²⁰ Hess, Neal. "Intercept Survey and Other Things." Message to Scott Thanasiu. 14 Aug 2013. E-mail.

²¹ Oxford Economics. *Tourism Economics. The Economic Impact of Tourism in Ohio. Philadelphia: May, 2011. PDF file.*

²² Huntley, Melinda. "Jim Mahon and Metro Parks Study." Message to Scott Thanasiu. 23 August 2013. E-mail.

spending. According to the Intercept Survey, the estimated spend per person per visit is \$7.46 while visiting Summit County.

Based on the number of estimated annual visits to Metro Parks by non-Summit County resident visitors, and their reported spend per person per visit, we calculate that Metro Parks tourists spend approximately \$2,479,242 annually in Summit County as a result of their choice to visit Metro Parks, Serving Summit County.

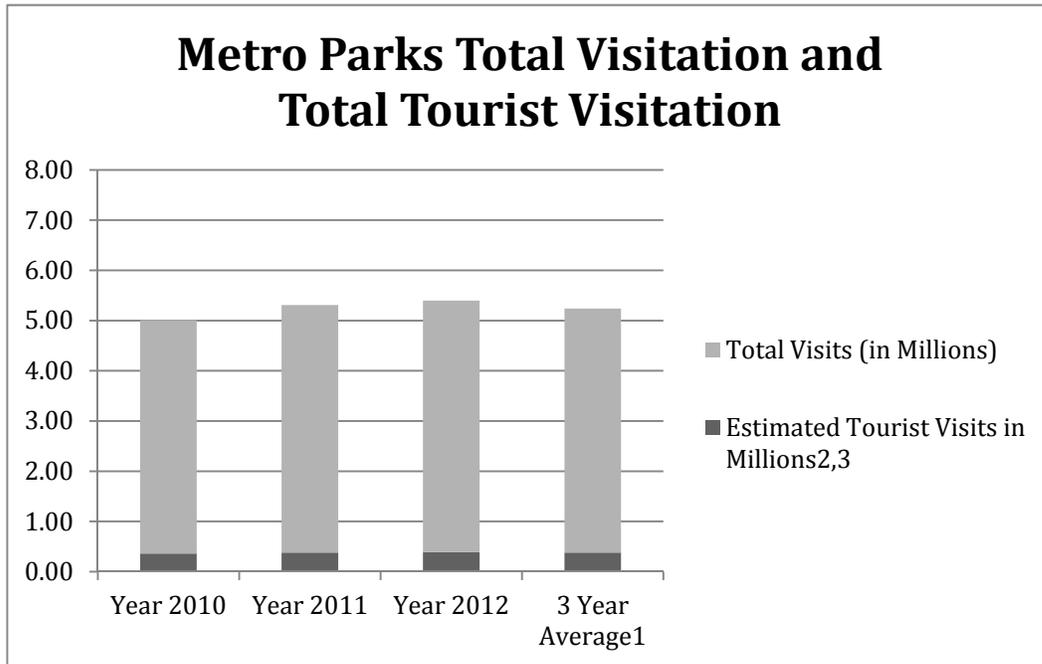
It is important to keep in mind that this survey was conducted over a relatively narrow period of time and took place in mostly pleasant weather, during the summer. It is possible that all Metro Parks visitors, including tourists, who provided visitation data in weekly or monthly increments, would reduce their visits because of inclement weather more commonly encountered during winter and early spring. Allowing for this seasonal adjustment in visitation frequency for all visitors, including tourists, we estimated a possible lower frequency of visitation for all visitors. At the same time it is important to remember that this study does not estimate the total of annual visits to Metro Parks. These data are a matter of public record and remain as a constant when figured into the calculations made in this report.

In this scenario the average Metro Parks visitor from our survey would possibly visit Metro Parks less often than reported. If this is a true assumption, given the fixed number of estimated total annual visits, as reported by Metro Parks, this would imply a larger number of unique visitors, visiting slightly less often over the course of the year (see Table IV notes and Appendix 3 for more details). Using this allowance for seasonally induced variability in visitor attendance, we estimate that tourists might account for as many as 409,707 of Metro Parks 5.2 million annual visits and spend upward of \$3,056,414 annually.

The estimated Metro Parks induced tourism spending is in the range of \$2,479,242 to \$3,056,414 annually, accurate within an order of magnitude.

Table III		
License Plate Tally and Intercept Survey Results for Estimates of Tourism		
	License Plate Tally	Intercept Survey
Observed Total Vehicles	290	n/a
Observed non-Summit County Vehicles	59	n/a
Observed Total Visitors	465	315
Observed non-Summit County Visitors	88	57
Non-Summit County Visitors as % of Total	18.92	18.09
<u>Sources:</u>		
Exhibit T.1 and Exhibit T.2 in <i>Annex iv: Calculations, Exhibits, Coded Data, and Raw Data</i>		

Chart 1



Sources:

1. Metro Parks, Chief of Special Projects; see Hess, Neal. "Intercept Survey and Other Things." Message to Scott Thanasiu. 14 Aug 2013. E-mail.
2. Intercept Survey; see Exhibit T.2 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

Notes:

1. Three year average of 5.2 Million total visits reported by Metro Parks as conservative estimate, based on preceding three year average of 5.24 Million visits
2. Estimated tourist visits shown as mean value of approximately 7.2% of total visits for each year as well as the three-year average, as determined by Intercept Survey.
3. Total Metro Parks tourist *visits* represent 7.2% of total Metro Parks visits, while the total number of non-Summit County unique *visitors* to Metro Parks is between 18.1 and 18.9% of total Metro Parks visitors according to the Intercept Survey and the License Plate Tally, respectively (see Table III). This occurs for two reasons: a. Not all non-Summit County resident visitors to Metro Parks are considered *tourists* for the purposes of this study: it has to be their primary reason for visiting. b. Summit County resident visitors have a different visitation rate to Metro Parks than do non-Summit County resident visitors, by a ratio ranging approximately 2.3 – 2.8:1 (see Intercept Survey data, Exhibit T.2 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*).

Table IV
Economic Impact of Metro Parks Induced Tourism

	Lower Bound² Estimate of Annual Tourist Spending	Upper Bound³ Estimate of Annual Tourist Spending
Total Annual Visits to Metro Parks ¹ (in 1,000s)	5,200	5,200
Estimated Annual Non-Summit County Resident <i>Visitors</i> - tourists	11,679	31,138
Estimated Total Annual tourist <i>Visits</i>	332,338	409,707
Average Spending Per Tourist Visit	\$7.46	\$7.46
Total Annual Metro Parks Induced Tourism Spending	\$2.48 – \$3.05 million^{4,5}	

Sources:

Metro Parks, Chief of Special Projects and Intercept Survey (Exhibit T.2 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*)

Notes:

1. Conservative average of Metro Parks attendance from three year period, 2010-2012.
2. These figures are calculated using the actual visitation rate, as reported by survey respondents.
3. These figures are derived using a conservative estimate of the visitation rate as reported by survey respondents. When the respondent's estimated visitation rate was reported in weekly increments, the calculated annual figure was reduced by a factor of 0.667. When the respondent's estimated visitation rate was reported in monthly increments, the calculated annual figure was reduced by a factor of 0.333. When the respondent's estimated visitation rate was reported in annual increments, the figure was calculated whole, as reported. This reduced estimate of visitation frequency was used to account for seasonally induced variations in attendance and visitor over estimation based on the season in which the survey was conducted (mid-Summer).

For example, if a survey respondent reported visiting Metro Parks three times per week, this behavior was assumed to be accurate in the first case (see note 2.), however, the more conservative estimate of visitation frequency (note 3) takes into account that during parts of Autumn, most of Winter, and much of early Spring, actual visitation might be much lower than when reported during the Summer.

Given the fixed estimate of 5.2 million total annual visits to Metro Parks, as the estimate of visitation frequency decreases- as with this more conservative figure for visitation rate- the estimated number of unique visitors must necessarily be a correspondingly higher figure. This increase in actual unique visitors and tourists translates into greater \$ expenditure.

4. It is important to keep in mind that the Total Annual Metro Parks Tourism Spending is an estimate. No inference should be made that this study is able to precisely measure the value of tourist spending.
5. This table is intended to demonstrate the range of lower and upper bound estimates for total Metro Parks induced Tourism Spending at a glance. Total Annual Metro Parks Tourism Spending is shown here as the lowest and highest ranging estimated outcomes for the range of possible corresponding factors, based on the collected data. Factoring the figures shown in this table may not reproduce the Total Tourism Spending figures shown. For more detailed information, see Exhibit T.2 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

Health Benefit Value

Introduction

Visitors to Metro Parks who engage in regular, moderate amounts of physical activity, i.e. *regular exercise*, at Metro Parks' facilities, enjoy health benefits, for which the estimate of a monetary value can be calculated. This is accomplished by estimating the number of people who exercise with regularity at Metro Parks and multiplying that figure by the estimated annual healthcare cost savings due to better health associated with regular exercise. This calculation results in the estimated health benefit value of Metro Parks.

The findings of the Surgeon General's 1996 report on, *Physical Activity and Health*, (herein after, *Surgeon General's Report*) underpin the premise of this study's claim. In that report, the Surgeon General announced the following major findings: "People who are usually inactive can improve their health and wellbeing by becoming even moderately active on a regular basis. Physical activity need not be strenuous to achieve health benefits. Greater health benefits can be achieved by increasing the *amount*²³", as defined by, "(duration, frequency, or intensity) of physical activity."²⁴

Discussion

Determination of what qualifies as physical activity sufficient to make a difference in a person's health and wellbeing is discussed in detail in Appendix 4. To summarize this discussion, the benchmark to define the term *exercise*, as it is used in this study, is any activity said to be, "at least as vigorous as rapid walking for 30 minutes or more"²⁵. This benchmark meets the criteria for minimum levels for two of the three metrics called for in the Surgeon General's report; *duration* and *intensity*. The *frequency* of physical activity is a third essential component of effective physical activity. The threshold for regularity for this study was set at a frequency of at least three periods of sustained activity per week; described to be at least as vigorous as rapid walking for thirty minutes or more²⁶. Survey respondents who claim to meet all three criteria- minimum levels of duration, intensity, and frequency of exercise- and do so while at a Metro Parks facility are considered, for the purposes of this study, *Metro Parks exercisers*.

Some of the respondents, who were considered Metro Parks exercisers, merely met the minimum threshold for frequency. Many others exceeded it. Similarly, a large contingent of these respondents- those meeting the minimum threshold for frequency and those exceeding it- reported engaging in activities at Metro Parks that exceeded the minimum combined thresholds of duration and intensity, For example, many respondents reported running for at least thirty minutes on five or more days of the week. Others reported walking for thirty minutes or more, twice a day, on every day of the week. No distinction

²³ Note, emphasis is that of this study's author, meant to draw attention to the Surgeon General's characterization of how the "amount" of exercise may be flexibly defined as a combination of contributing measurable factors associated with physical activity, i.e. *duration*, *frequency*, and *intensity*.

²⁴ <http://www.cdc.gov/nccdphp/sgr/pdf/sgraag.pdf>.

²⁵ See Exhibit J in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

²⁶ See Exhibit J in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

was made, in this study's calculations, between reported levels of activity that involved high levels of frequency, duration, and/or intensity and those merely meeting the minimum requirements for consideration.

Estimating the Number of Metro Park Regular Exercisers

To estimate the annual number of Metro Parks visitors who regularly engage in moderate amounts of physical activity at Metro Parks, data were collected through primary research and secondary data. The primary data came from questions in the License Plate Tally²⁷ and the Intercept Survey²⁸ described in the Tourism section and in Appendix 4. These data were aggregated to overall estimates using Metro Parks' estimates of total annual visits.

The two surveys provided complementary data sources. The License Plate Tally was used to collect data about the number of vehicles, vehicle state and county registration, the number of passengers in each vehicle, and whether or not the visitors appeared to be exercising.²⁹ The Intercept survey was used to collect data on Metro Parks visitors' rate of visitation, how they typically use Metro Parks' facilities, and whether or not they were 65 years of age or older. If a respondent reported to visit Metro Parks at least three times per week, the following question was asked; "of those visits, how many times were (you) engaged in some form of exercise at the park that was at least as vigorous as rapid walking for thirty minutes or more?" If their response was three times per week or more, the respondent was considered to be a regular, *Metro Parks exerciser*. Metro Parks exercisers were also classified as either being at least 65 years old or younger than 65 years of age.

The research team³⁰ designed and submitted two questions to Metro Parks for vetting and inclusion in a poll of Summit County; commissioned, in part, by Metro Parks and conducted by the Center for Marketing & Opinion Research, LLC (herein after, *CMOR*).³¹ The two questions were posed as questions #3 and #4 of six sequential questions related directly to Metro Parks and related to the frequency of visitation and frequency of engagement in moderate exercise in the parks (see Table VI notes for more information). Metro Parks furnished data from this survey to the research team for use in this study. The data collected were used to check the validity of the primary surveys described

Estimating the Health Benefit Value for an Individual 'Exerciser'

Several models have been developed to estimate exercise related health benefits. This study employs a variation of the Health Benefits Calculator (HBC) model to estimate the healthcare cost savings due to better health associated with regular exercise. The HBC model was developed by the Trust for Public Lands (TPL) and is based on research and

²⁷ See Exhibit H.1b in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

²⁸ See Exhibit J in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

²⁹ For an abbreviated definition of activities that qualified as exercise for inclusion in this study, see instruction note No. 3 of Exhibit H.1b in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

³⁰ For details of the sample size and procedures in CMOR study, see Technical Appendix 4.

³¹ See Exhibit H.4 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

data from Chenoweth & Associates, Inc., (herein after, *Chenoweth*)³² that was appended to the study of *The Economic Benefits Of Denver's Park And Recreation System*, (herein after, Denver Study)³³. It recognizes that moderate amounts of physical activity should reduce the risk of common types of medical problems like heart disease and diabetes and that estimates of costs savings require comparing the frequency with which these diseases are present in those who exercise with the rate at which they afflict those who do not. Such cost comparison studies have been done using the HBC model in a number of settings and are summarized in Chenoweth.

Data from two of the sources included in the body of research conducted by Chenoweth and TPL were used for this study; (Wang) and (Seven States)³⁴. They represent relatively conservative estimates based on large sample sizes (see also Appendix 4). For calculations in this report, figures from both studies are adjusted for inflation using Bureau of Labor Statistics' data for the Medical Consumer Price Index (Medical CPI)^{35,36}. Because older adults typically experience greater health care costs, the resulting figures are each doubled, when applied to Metro Parks exercisers who are 65 years old or older.³⁷

Wang³⁸ concluded that there was an unadjusted average annual cost difference of \$250 due to physical inactivity (2004 dollars). This amount, adjusted for inflation to \$334.51 (2012 dollars) was selected to represent an acceptable upper bound to the per person range of plausible annual health benefit value outcomes.

From the "Seven States" study,^{39,40,41,42,43,44,45,46} an unadjusted average annual cost

³² See Chenoweth & Associates, Inc. *Appendix 5: A Tool for Quantifying the Economic Value of Human Health Associated With City Parks*. Health Management Associates. New Bern, N.C. 2010.

³³ See Harnik, Peter and Welle, Ben. *The Economic Benefits of Denver's Park And Recreation System: A Report by The Trust for Public Land's Center for City Park Excellence for the City and County of Denver*. Commissioned and funded by: The City and County of Denver, The Park People, Kaiser Permanente, and The Greenway Foundation of Denver. The Trust For Public Land. Washington, D.C. 2010.

³⁴ See Chenoweth & Associates, Inc. *Appendix 5: A Tool for Quantifying the Economic Value of Human Health Associated With City Parks*. Health Management Associates. New Bern, N.C. 2010.

³⁵ See Exhibit B in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

³⁶ http://www.bls.gov/cpi/cpi_dr.htm#2001.

³⁷ *From Baby Boomers to Elder Boomers; providing Health Care for an Aging Population*, Washington DC, Watson Wyatt World Wide, 1996

³⁸ Wang, F., McDonald, TI, Champagne, L. and Edington, D. *Relationship of body mass index and physical activity to health care costs among employees*. Journal of Occupational and Environmental Medicine, 46, 5, 428-436. 2004. DOC.file

³⁹ Tanasescu, M., Leitzmann, MF., Rimm, EB., Willet, WC., Stampfer, MJ., & Hu. FB.

(2002). *Exercise type and in relation to coronary heart disease in men*. JAMA, 288, 1994-2000.

⁴⁰ Chenoweth & Associates, Inc. [Health Management Associates]. *The Economic Costs of Physical Inactivity, Obesity, and Overweight in California Adults: 2000*. TOPLINE REPORT. California Department of Health Services. January, 2004. Ref. found in DOC.file.

⁴¹ Chenoweth & Associates, Inc. [Health Management Associates]. *The Financial Cost of Various Risk Factors among Massachusetts Adults*. Massachusetts Department of Public Health. 2003. Ref. found in DOC.file.

difference of \$160 (2004 dollars) due to physical inactivity was selected and adjusted for inflation to \$214.08 (2012 dollars). This figure represents an acceptable lower bound to the range of per person plausible annual health benefit value outcomes.

By multiplying these per person annual health benefit estimates by the estimated total annual number of Metro Parks exercisers under 65 and adding it to the same calculation carried out for those over 65, a range of annual health benefits value attributable to Metro Parks usage can be estimated.

Results

It is important to keep in mind that the Intercept Survey was conducted over a relatively narrow period of time and took place in mostly pleasant weather, during the summer. Data collected from survey respondents was used “as is” (hard data) for calculations of our baseline estimate, which is indicated by the lower estimate in the calculated range of value for health benefits. It is possible that Metro Parks visitors, who provided visitation data in weekly or monthly increments, would reduce their number of visits seasonally, because of inclement weather more commonly encountered during winter and early spring. Allowing for this seasonal adjustment in visitation frequency for all visitors, including exercisers, we estimated a possible lower frequency of visitation for all visitors. At the same time it is important to remember that this study does not estimate the total of annual visits to Metro Parks. These data are a matter of public record and remain as a constant when figured into the calculations made in this report.

In this scenario the average Metro Parks visitor from our survey, (including exercisers), would possibly visit Metro Parks less often throughout the year than reported. If this is a true assumption, given the fixed number of estimated total annual visits, as reported by Metro Parks in their annual report, this would imply a larger number of unique visitors, (again, including exercisers), visiting slightly less often over the course of the year (see Table IV notes for more details).

According to the data collected from the Intercept Survey and the License Plate Tally, an estimated 23.58% of all Metro Parks visitors are regular exercisers meeting all of the criteria discussed earlier in this section. Metro Parks exercisers aged 65 and older make up 3.14% of all visitors. According to our estimates, there are between approximately 64,490 and 172,113 unique Metro Parks visitors annually. Their annual visits range

⁴² Chenoweth & Associates, Inc. [Health Management Associates]. *The Financial Cost of Physical Inactivity Among Michigan Adults*. Michigan Fitness Foundation, Lansing, MI. 2003. Ref. found in DOC.file.

⁴³ Chenoweth DH. *The Economic Cost of Physical Inactivity in New York State*. American Medical Athletic Association Quarterly, Spring 2000; 14: 2, 5-8. Ref. found in DOC.file.

⁴⁴ Chenoweth & Associates, Inc. [Health Management Associates]. *The Economic Cost of Physical Inactivity, Obesity, Type II Diabetes, and Low Fruit/Vegetable Intake Among North Carolina Adults*. Be Active North Carolina, Inc. June 22, 2004. Ref. found in DOC.file.

⁴⁵ Chenoweth, DH. *The Medical Cost of High Serum Cholesterol in Harris County, Texas*. The Journal of Texas Medicine. 100, 5, 49-53. 2004. Ref. found in DOC.file.

⁴⁶ The Economic Cost of Physical Inactivity Among Washington State Adults. (2004) Conducted by Chenoweth & Associates, Inc. [Health Management Associates] for The Washington State Department of Health and The Washington Coalition to Promote Physical Activity.

between roughly 81 to 30 times each, respectively, given the constant of 5.2 million annual visits, which is the estimate provided in Metro Parks' 2012 Annual Report.⁴⁷ Based on these figures there are between 15,210 to 40,596 regular Metro Parks exercisers. Somewhere between 2,082 and 5,413 of them are at least 65 years of age.

As a check on these estimates, data collected from the CMOR survey and U.S. Census Bureau population estimates for Summit County, give the estimated number of regular Metro Parks exercisers as 27,174. No data was collected from the CMOR survey about exerciser age, as it pertained to this study.

Given the two estimates of Metro Parks exercisers and the cost adjusted estimates for healthcare cost savings due to better health associated with regular exercise, the estimated Health Benefit Value of Metro Parks, ranges between \$4,124,117 and \$17,201,179 annually, or between \$5,175,224 and \$8,086,529 per year, respectively. (Tables V and VI)

The baseline estimate of this annual health benefits value is \$4,124,117. We consider that providing a range takes into account some of the issues associated with using primary survey data. These primary data provide an improved level of accuracy, having been collected locally from actual Metro Park visitors, but respondents may over report or under report the data. In addition using secondary data on medical cost differences assumes that the populations studied had the same characteristics as Summit County. Taking all of these variables into consideration, it is also possible to calculate a mean value, which is \$8,646,773.

The reader should also bear in mind the purpose for which this aspect of the overall study is intended, which is to estimate Metro Parks' value only as it relates to the health benefits that are enjoyed by a specific segment of Metro Parks visitors. This study and the resulting estimate of health related economic value only considers the benefit obtained by Metro Parks visitors who engage in regular exercise while at Metro Parks facilities in Summit County, Ohio. No attempt is made, by this study, to estimate any possible benefits realized by Metro Parks visitors who do not meet the criteria of Metro Parks *exercisers*. Nor is any claim of absolute value made, nor should it be inferred from this study.

⁴⁷ The reason for the range in the numbers of visitors is explained in detail in the Tourism section

Table V
Health Benefit Estimate Due To Regular Exercise At Metro Parks
Using License Plate Tally and Intercept Survey Data

	License Plate Tally	Intercept Survey
Observed Visitors ^{1,2}	465	318
Observed Exercisers ^{1,2}	395	75
Observed Exercisers \geq 65 yrs ³	Not observed	10
Metro Parks Total Annual Visits ⁴	n/a	5,200,000
Estimate of Metro Parks Total Annual Visitors (range) ^{5,10}	64,490 – 172,113	
% Total Visitors as Exercisers	23.58	
% Total Visitors as Exercisers \geq 65 yrs	3.14	
Estimated Total Exercisers (range) ¹⁰	15,210 – 40,596	
Estimated Total Exercisers \geq 65 yrs (range) ¹⁰	2,028 – 5,413	
Per capita Health Cost Savings from exercise, \$160 adj. for 2004 Medical CPI change to 2012 ⁶ (factored x 2.0 for \geq 65 years old) ⁷	214.08 (428.16)	
Per capita Health Cost Savings from exercise , \$250 adj. for 2004 Medical CPI change to 2012 ⁸ (factored x 2.0 for \geq 65 years old) ⁶	334.51 (669.02)	
Estimated Health Benefits Value (range)	\$4,124,117 - \$17,201,179	

Notes:

1. See Exhibit H.2 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
2. See Exhibit H.1a in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
3. See Exhibit H.1a in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
4. See Exhibit H.3 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
5. See Exhibit H.1 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
6. See Exhibit B in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
7. See “Seven-States”, Chenoweth & Associates, Inc. *Appendix 5: A Tool for Quantifying the Economic Value of Human Health Associated With City Parks*. Health Management Associates. New Bern, N.C. 2001.
8. See Exhibit B in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
9. See Chenoweth & Associates, Inc. *Appendix 5: A Tool for Quantifying the Economic Value of Human Health Associated With City Parks*. Health Management Associates. New Bern, N.C. 2001.
10. The estimated ranges for total visitors, total exercisers, exercisers 65 years old and older, and health benefits value in this table are calculated based on: a. hard data as collected by the surveys and; b. a conservative estimate of that same data with respect to the visitation rate as reported by survey respondents.
 - The conservative estimate of visitation frequency explained: When the respondent’s estimated visitation rate was reported in weekly increments, the calculated annual figure was reduced by a factor of 0.667. When the respondent’s estimated visitation rate was reported in monthly increments, the calculated annual figure was reduced by a factor of 0.333. When the respondent’s estimated visitation rate was reported in annual increments, the figure was calculated whole, as reported. This reduced estimate of visitation frequency was used to account for seasonally induced variations in attendance and visitor over estimation based on the season in which the survey was conducted (mid-Summer).
 - For example, if a survey respondent reported visiting Metro Parks three times per week, this behavior was assumed to be accurate and used to calculate one plausible limit for the range of probable outcomes, however, the more conservative estimate of visitation frequency is used to calculate another plausible limit of the range, taking into account that during parts of Autumn, most of Winter, and much of early Spring, actual visitation might be much lower than when reported during the Summer.
 - Given the fixed estimate of 5.2 million total annual visits to Metro Parks, as the estimate of visitation frequency decreases- as it does when a more conservative figure for visitation rate is used- the estimated number of unique visitors must necessarily be a correspondingly higher figure. This increase in actual unique visitors and exercisers translates into greater estimated health benefit value.

Table VI
Health Benefit Estimate Using Data From CMOR 2013
Survey of Summit County Ohio¹ and U.S. Census Bureau Data

	Number of Respondents	Percentage of Respondents
Respondents to Metro Parks Specific Questionnaire	640*	100
# Visit at Least Once per Year	596	74.5*
# At Least Moderate Amount of Physical Activity	36	6.0
Summit County Ohio Population (2012) ²	540,811	
Estimated # of Unique Annual Metro Parks Visitors ^{1,2}	402,904*	
Estimated # of Annual Metro Parks Exercisers ³	27,174	
Estimated Health Value to Metro Parks Exercisers (range) ⁴	\$5,175,224 - \$8,086,529	

Sources:

1. Center for Marketing & Opinion Research. *2013 Summit Poll: Prepared for Metro Parks, Serving Summit County*. Akron, Ohio. 2013. PDF.file.
2. <http://quickfacts.census.gov/qfd/states/39/39153.html>.
3. See Exhibit H.3 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.
4. See Chenoweth & Associates, Inc. *Appendix 5: A Tool for Quantifying the Economic Value of Human Health Associated With City Parks*. Health Management Associates. New Bern, N.C. 2010.

Notes:

- CMOR reported final poll sample as 800. From this figure a percentage based on the number of respondents reporting to have visited Metro Parks at least once per year was calculated. That percentage, factored with the U.S. Census Bureau population estimate for Summit County was used to estimate the annual number of unique Metro Parks visitors. The percentage total of all respondents for respondents fitting the criteria to be considered Metro Parks Exercisers for this study was factored with the estimate of unique Metro Parks visitors to calculate the estimate for the number of Metro Parks Exercisers. Calculation based on HBC multiplier developed by Chenoweth & Associates.
- The following two questions, #3 & #4, were submitted by the Research Team and included in the CMOR survey:

QUESTION #3 - IF AT LEAST ONCE A WEEK: About how many times per week would you say you usually visit?

- • Less than three days per week
- • Three to four days per week
- • Five to seven days per week
- • Every day or more than once per day

QUESTION #4 - IF AT LEAST THREE TO FOUR DAYS PER WEEK: About how many times per week would you say you engage in some form of exercise at the park, which is at least as vigorous as rapid walking, for 30 minutes or more?

- • Less than three days per week
- • Three to four days per week
- • Five to seven days per week
- • Every day or more than once per day

Value of Natural Ecosystems (Existence Value)

Introduction

In this section we consider value of the Metro Parks as a forested environment. The Metro Parks system contains a specific set of ecosystems representative of the natural vegetation found in NE Ohio at this point of time. As documented by park biologists⁴⁸ they include species that are scarce or endangered or unusual elsewhere regionally. They also, with the Cuyahoga Valley National Park, represent one of the few remaining areas in the region that contain such ecosystems. To the extent that society values the retaining of such areas and their ecosystems, Metro Parks adds a value to the region that is not included in discussions of the value of the parks to their users.

In determining the value of the continued maintenance of a specific ecosystem, like the Metro Parks, to those who may or may not use the park directly, economists use the terms *option and existence values*. In context of this study, option value is the value that people put on maintaining the ability to visit the parks in the future and *existence value is the value that people put on the continued existence of the parks, whether they visit them or not*. It is this second measure that relates to the maintenance of an ecosystem. Option and existence values are clearly subjective evaluations, but not to include them would be to undervalue the importance of the Metro Parks' role in protecting scarce natural ecosystems. The very idea of existence value implies that, while we limit our discussion here to the value placed on the Metro Parks' natural settings by citizens of Summit County, this value can theoretically be extended to anyone who enjoys simply knowing that these specific areas exist and are being maintained for posterity.

Discussion and Results

The economist's measure of the value people put on the existence of the Metro Parks is how much people are willing to pay for their continued existence as an ecosystem. The direct way to calculate this value is to do a sample survey of Summit County residents. It was not possible to do such a survey for this study, but there are two ways to get an indirect measure using secondary data.

The first of these methods is to use values that have been calculated for similar environments elsewhere. These are called "direct transfer values" or "transfer values". Clearly what can be classified as an appropriately "similar environment", for comparative use, is one of several major issues of concern involved in such a comparison- or 'transfer'. A discussion of transfer issues by different reviewers of the many survey studies available are found in Appendix 5.

There are two approaches used by major reviewers: both yield a wide range of values, clearly dependent on the context of the studies. In choosing values to use in this study, we also decided to use a range of values and include both approaches. The major criterion was to choose values that were conservative and seemed to represent the Metro Parks

⁴⁸ Unpublished document provided by Metro Parks, June 2013

environment and ecosystem. From studies of existence values of forests⁴⁹, we chose the value of \$50.67 per household per year expressed in 2012 dollars^{50,51} as the amount people were willing to pay for a U.S. forest ecosystem. An alternative value given to forest habitat preservation, in another series of studies, was \$500-608 per acre⁵².

The values from these two transfer value approaches are shown below in Table VII.

Table VII	
Existence Value of Metro Parks	
(based on data from similar studies conducted elsewhere)	
Based on dollar value per household estimates ¹	\$8,416,704
Based on minimum estimate of dollar value per acre ²	\$1,257,976
Based on maximum estimate of dollar value per acre ²	\$6,988,700
Sources:	
1. Pearce (2001) estimate updated to 2012 dollars and assuming 221,498 households in Summit County.	
2. Earth Economics (2010), <i>The Value of Tacoma Metro Parks, Part II</i> . Estimates updated to 2012 dollars and assuming Metro Parks acreage of 11,500.	

These values establish a potential range from \$1,257,976 to \$8,416,704.

The other method of determining existence value using secondary data is to look at the amount by which Summit County residents have been willing to support Metro Parks in the past, as an addition to their property tax^{53,54}. Again this measure, while relating to Metro Parks directly, has its own limitations. Such an estimate would represent more than just perceived value of Metro Parks as an ecosystem (existence value). It would also include other values, such as use for recreation, education, exercise, etc...(user value). The estimate then needs to be adjusted downward to represent only the existence value (see Appendix 5). Also the addition to the property tax for the average homeowner needs to be calculated as the weighted average of those who voted for the property tax increase (were willing to support the average increase) and those who did not support the tax⁵⁵.

If all voters are homeowners then the weighted value is likely to be an underestimate, as those who voted for the levy might have agreed to support Metro Parks by an amount larger than what the levy requires and those who voted against it might have agreed to support Metro Parks by a somewhat lesser amount. However, some of those who voted

⁴⁹ <http://eprints.ucl.ac.uk/17587/1/17587.pdf>

⁵⁰ <http://data.bls.gov/pdq/SurveyOutputServlet>.

⁵¹ See Exhibit E.9 BLS CPI data 2000-2013 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

⁵² Earth Economics, *The value of Tacoma Metro Parks, Part II, 2010*

⁵³ Exhibit E.7 in *Annex iv: Calculations, Exhibits, Coded Data, and Raw Data*.

⁵⁴ <http://www.summitcountyboe.com/ElectionResults/Results/elec110706.HTM>.

⁵⁵ <http://www.summitcountyboe.com/ElectionResults/Results/elec110706.HTM>.

for the levy are renters, who may not think that the tax would affect them, and would therefore vote for it^{56,57}. In this case the value calculated would be an over estimate.

Assuming that the additional values paid in property tax per homeowner^{58,59,60} do represent the total willingness to support the Metro Parks, the value needs then to be adjusted to represent only existence value. As discussed in Appendix 5, review of the direct studies of ecosystem valuation suggests that 50% to 85% comes from existence value.⁶¹ In Table VIII below we use 50% as a minimum and 75% as a maximum.

This method gives a range of values from \$3,372,004 to \$5,058,007.

Comparing the estimates using both methods gives existence values that vary from \$1,257,976 to \$8,416,704, the range given by the transfer estimates. Given the problem that these data may well be inappropriate, because of lack of similarity to Summit County's environment, the large range is not surprising. Nevertheless it is gratifying that the alternative more direct method based on past data from this area gives values in the middle of this range. It suggests to us that a conservative estimate of existence value could be \$1,257,976 to \$5,058,007.

⁵⁶ <http://www.summitcountyboe.com/ElectionResults/Results/elec110706.HTM>.

⁵⁷ http://www.city-data.com/county/Summit_County-OH.html.

⁵⁸ <http://www.summitmetroparks.org/getdoc/2786d5c6-db98-436d-90a4-08348d9b070d/AReport-2012.aspx>.

⁵⁹ http://www.city-data.com/county/Summit_County-OH.html.

⁶⁰ http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_5YR_DP04.

⁶¹ Vincent, J.W.; Hagen, P.G.; Welle, P.G.; Swanser, K. 1995. Passive-use values of public forestlands: a survey of the literature. Unpublished report for the United States Department of Agriculture, Forest Service.

Table VIII	
Existence Value of Metro Parks	
(based on actual dollar support for 2006 Metro Parks levy – Issue 18)	
Levy details (Issue 18)	
Number of Registered Voters in Summit County (excluding Twinsburg)	358,277
Number of Votes Cast in 2006 Levy	191,271
Number of Yes Votes Cast in 2006 Levy	107,756
Valuation Estimates	
Average Annual Levy Paid Per Non-rental Homeowner, 2010 ¹	\$117.23
Average Annual Value of Levy Support Per Summit County Voter (excl. Twinsburg) ²	35.26
Annual Existence Value (minimum estimate) ³	\$3,372,004
Annual Existence Value (maximum estimate) ⁴	\$5,058,007
Notes:	
<p>1. Represents the average increase in property tax due to the levy calculated from the value of the levy in 2012 divided by the number of non-rental homes and condos 152,811 (http://www.summitmetroparks.org/getdoc/2786d5c6-db98-436d-90a4-08348d9b070d/AReport-2012.aspx. & US Census 2007-2011, 5 year average).</p> <p>2. Calculated by using the average increase in tax, (\$117.23) as the willingness to support of the yes voters weighted by the % yes votes for the levy (107,756/191,271 plus the willingness to support of the no voters (0) weighted by the % of number of voters (191, 271- 107,756/191,271) See, http://www.summitcountyboe.com/ElectionResults/Results/elec110706.HTM..</p> <p>3. Calculated from value of support per voter adjusted down by 50% to give minimum existence value per voter, multiplied by number of voters (191,271) OR 358,277 no. of registered voters .</p> <p>4. Calculated from value of support per voter adjusted down to 75% to give maximum existence value multiplied by number of voters.</p>	

Value of Volunteer Service

Another important contribution of Metro Parks operations to the local community involves the service of park volunteers. According to park records over 700 volunteers gave more than 36,500 hours of service to the park system in 2012. This service extends

to many areas of park operations, including support of customer service, resource management, interpretations, and rangers.⁶²

The value of volunteer hours represents a range of impacts of the parks: saved costs to the park, additions to education value, and a measure of what people are willing to give up in the value of their leisure to maintain the park. In many cases value of hours spent volunteering also measure the individual's satisfaction from their use of the park in this way.

Placing a dollar value on these services is challenging given that by their very nature these activities do not involve monetary transactions and hence there is no direct measure of willingness to pay by those who are the users or consumers of the services provided by volunteers. A typical approach to value volunteer time, used frequently in the non-profit sector, is to value time based on the "opportunity cost" of what these individuals could have earned in the paid labor force for the hours they served as volunteers.⁶³ These forgone wages can also be viewed as an indicator of the minimum value that these 700 individuals place on services and activities offered within the system.

Since volunteers can be drawn from a wide variety of occupations within the community, the average hourly wage and salaries paid across all occupations is typically used to approximate forgone earnings. In Ohio, for 2012, this figure stood at \$20.52/hour.⁶⁴ Adding 12% fringe benefits to this figure⁶⁵ the full hourly estimate comes to \$22.98/hour. Applying this rate to the total amount of volunteer hours reported by Metro Parks, the results indicate an estimated overall value for volunteer services at nearly \$840,000.

The above analysis presumed that the "opportunity cost" of volunteers is their forgone wages in the labor market. For some volunteers, however, the best alternative use of their time may be leisure activities. This may apply, for example, to volunteers who are retired from the labor force. Economists have employed a variety of techniques to value "time" more generally, including surveys (willingness to pay) and revealed preference (choices made to save time and the associated cost to accomplish this). Generally, this literature has concluded that individuals value leisure time well below forgone wages.⁶⁶ Accordingly, a "lower bound" figure of the value of volunteer time, set at 50 percent of forgone wages, is also used in this analysis to provide a range of plausible values for

⁶² <http://www.summitmetroparks.org/getdoc/2786d5c6-db98-436d-90a4-08348d9b070d/AReport-2012.aspx>.

⁶³ For further details see <http://grantspace.org/Tools/Knowledge-Base/Nonprofit-Management/Employment-Volunteering/Monetary-value-of-volunteer-time> and http://independentsector.org/volunteer_time.

⁶⁴ http://www.bls.gov/oes/current/oes_oh.htm#00-0000.

⁶⁵ http://independentsector.org/volunteer_time.

⁶⁶ Much of this work has been associated with time savings associated with travel. For a summary of some of this literature see, for example, Victoria Transport Policy Institute, *Transportation Cost and Benefit Analysis II – Travel Time Costs*, available at <http://www.vtpi.org/tca/tca0502.pdf>, 22 February 2012.

these services.⁶⁷ This would imply the estimated value of Metro Parks volunteers in the range of \$420,000 to \$840,000 as summarized in Table IX.

Table IX		
Valuing the Services of Park Volunteers		
	Value of Volunteer Time (thousands of dollars)	
Total Volunteer Hours	Fifty Percent of Prevailing Wage Rate	Prevailing Wage Rate
36,500	\$420	\$840
Notes: See text for calculations and sources.		

Operations Impacts

Introduction

The impact of Metro Parks operations can be divided into two parts: direct and indirect/induced. Direct impacts pertain to activity directly related to the operational side of the Metro Parks system. This includes the number of Metro Park employees, the earnings paid to these employees, and purchases of goods and services from local vendors within the county. Indirect/induced impacts account for the “ripple effect”, which these activities have on the rest of the local economy. For example, as part of its normal business activity Metro Parks will purchase goods and services from suppliers in the region and these suppliers will in turn purchase additional goods and services from other regional suppliers. Employees working for Metro Parks also purchase goods and services locally and this further increases business activity in the local economy. All of this increased activity creates additional jobs and earnings for the local regional economy, comprising the indirect/induced effect of the economic impact analysis. The “total effect” of Metro Parks operations is found, by summing the direct and indirect/induced effects.

Three different perspectives on local economy impact are analyzed, including the total effect of Metro Park operations on gross economic output, earnings (wages and salaries, the net earnings of sole proprietors and partnerships, and employer contributions for health insurance), and employment within Summit County. No distinction is made between full-time and part-time employment in this analysis.

⁶⁷ For example, Forester, McNown, and Singell use this figure in “A Cost-Benefit Analysis of the 55 MPH Speed Limit,” *Southern Economic Journal*, Vol. 50, No. 3 (Jan., 1984), pp. 631-641.

To calculate the magnitude of the indirect/induced effects, the spending by Metro Parks and earnings of its employees must be separated between what takes place in the region and what occurs elsewhere. By prior agreement, the region selected for this analysis coincides with the borders of Summit County. Using the data on local spending/earnings, the indirect/induced effects are then calculated using the Summit County multipliers estimated using the Regional Input-Output Modeling System (RIMS II) of the U.S. Department of Commerce, Bureau of Economic Analysis.⁶⁸

It is important to keep in mind when reviewing the results presented in the final report that, similar to any economic impact models, the estimates generated from this process should be properly viewed as “order of magnitude” impact and not precise estimates. Further, several important assumptions are made in an analysis, discussed further in the technical appendix of this report (Appendix 6). The analysis also reflects Metro Parks spending patterns for a single year (2012), if spending on local goods and services varied materially in other years, the economic impacts may be somewhat different than what is estimated in this report.

Summit County Economic Impacts of Metro Parks Operations

The economic impacts of the Metro Parks operations on gross economic output, employment, and earnings in Summit County for the year 2012 are summarized in Table X. In the top line of the table the direct impacts are summarized. Metro Parks expenditures contributed direct \$5.9 million to the gross economic output of the region. In total there were 208 Metro Parks employees who resided in Summit County, a figure that includes part-time and paid seasonal workers. These employees earned approximately \$4.6 million.⁶⁹ All together, these figures constitute the direct effects of Metro Parks operations on the Summit County economy.

The indirect/induced or “multiplier” effects of the Metro Parks are summarized in the middle rows of Table X. In 2012, the Metro Parks purchases with the county resulted in an estimated indirect and induced \$3.8 additional gross output by suppliers of goods and services to Metro Parks. This resulted in approximately 50 additional jobs being created and \$2.2 million in employee earnings. The substantial portion of this increased economic activity – additional earnings and employment - took place in the construction, finance, and the professional scientific and technical services industries.

In all, the total estimated impact of Metro Parks operations to Summit County economy (last line in the table) is estimated to over \$14 million in gross economic output, 288 jobs and \$7.8 million in earnings.

⁶⁸ For more information on the RIMS II multipliers, see <http://www.bea.gov/regional/rims/index.cfm>.

⁶⁹ For the purposes of conducting regional economic impact analysis the BEA defines earnings to include employer contributions to health insurance and to deduct employee contributions to social insurance. To the extent possible this definition of earnings is adhered to in this analysis.

The economic impacts of the Metro Parks on area economic output, jobs, and earnings will continue into the future as long as the assumptions that went into deriving these estimates remain viable.

Finally, it is important to keep in mind when reviewing the results presented in the final report that, similar to any economic impact models, the estimates generated from this process should be properly viewed as “order of magnitude” impact and not precise estimates. Further, several important assumptions are made in an analysis such as this that is based on an input-output framework, including fixed purchase patterns, industry homogeneity, and no supply constraints.⁷⁰ The analysis also reflects Metro Parks spending patterns for a single year (2012), if spending on local goods and services varied materially in other years, the economic impacts may be somewhat different than what is estimated in this report.

Table X			
Economic Impact of Metro Parks Operations in Summit County			
	Gross Economic Output (thousands of \$)	Earnings¹ (thousands of \$)	Jobs²
<i>Direct Effect of Metro Parks</i>	\$5,886.7	\$4,578.8	208.0
<i>Indirect/Induced Effects of Metro Parks</i>			
Metro Parks Purchases of Goods and Services	\$3,790.9	\$2,197.8	50.3
Purchases by Metro Parks employees	\$4,433.2	\$973.9	29.5
Total Economic Impact	\$14,110.8	\$7,750.5	287.8
<i>Source:</i> RIMS II multipliers and author’s calculations.			
<i>Note:</i> Column totals may not add due to rounding.			
^{1.} Earnings are defined in this analysis to include total wages and salaries and employer contributions for health insurance. Contributions to pension plans excluded.			
^{2.} Includes full-time and part-time jobs.			

Caveats

When reviewing the results summarized in this report it is important to acknowledge that the estimated impacts are properly viewed as “gross” impacts of Metro Parks operations.

⁷⁰ For a further discussion see, Bureau of Economic Analysis, RIMS II, *An Essential Tool for Regional Developers and Planners*, available at http://www.bea.gov/regional/pdf/rims/RIMSII_User_Guide.pdf.

Most of Metro Parks spending is financed using local taxes.⁷¹ These tax resources could have alternatively been used by the private or public sectors to finance other local spending, which also would have had an impact on local economic activity. Possible alternative uses of these resources are not addressed in this analysis nor are the impact of these on alternative uses of resources on the local economy considered.

Conclusion

The Metro Parks Foundation proposed that this analysis of Metro Parks' economic impact on the local region-Summit County, Ohio- be conducted, with the understanding that this sort of analysis can only provide 'best estimates' and that there would be no way of knowing, beforehand, if the results would be representative of Metro Park's preferred outcome. These best estimates were calculated by applying established economic principles to the best data available, given the limitations of the study.

It is important to keep in mind that this study was not a 'Cost Benefit Analysis'. It does not purport to establish Metro Parks' net value to the local community. Rather, the purpose of this study was to gauge just a few of the many ways in which the Citizens of Summit County-and visitors from points beyond the county line- engage in what Metro Parks has to offer and then attempt to put a 'dollar value' on that relationship. Similarly, this study examined how Metro Parks- through its business operations, its stewardship of the land, and because of the characteristics of its natural settings- influences the local community and the region. This influence, too, was measured and calculations were used to estimate a monetized value.

Metro Parks is primarily funded by a tax on real estate. These tax resources could have been alternatively used, by the private or public sectors, to finance other local spending, which also would have had an impact on local economic activity. Possible alternative uses of these resources are not addressed in this analysis nor is the impact of these on alternative uses of resources on the local economy considered.

Metro Parks' stated mission is to "acquire, conserve and sustainably manage natural resources to provide the public with passive outdoor recreational and educational opportunities through a regional system of natural-area parks". This study did not measure what economists call 'direct use' of general outdoor recreational activities, nor did it attempt to measure the value of education e.g., guided Ranger talks and evening programs; presentations and workshops at F.A. Seiberling Naturealm; the offer of free venues for school age children's field trips to historic locations; and beautiful settings for the presentation of performing arts. In other words, this study did not measure most of the

⁷¹ Approximately 2 percent of Metro Parks expenditures were financed by sources from outside the county, including grants from the Ohio EPA, Muskingum Watershed Conservancy District, and Clean Ohio Rails.

things that are generally recognized to be what Metro Parks provides in the ongoing fulfillment of its mission.

What this study does show is that, in addition to accomplishing its stated goal, Metro Parks is a valuable asset to the citizens of Summit County and to the county government. The Metro Parks system is a valuable resource to the people of Summit County, in the following ways. Metro Parks provides a clean safe environment for physical activity. Metro Parks is a draw for tourism, contributing to the well being of local businesses. Metro Parks has a positive influence on the price of local real estate. Metro Parks reduces the impacts of storm water runoff and in doing so saves the county government and the taxpayer money, while simultaneously contributing to the wellbeing of the regional ecosystem. People in Summit County love their Metro Parks and willingly give of their time to help with many Metro Parks functions, thereby reducing the cost of those functions and saving taxpayers money. Metro Parks protects wild places and endangered and rare species. Finally, Metro Parks is a good steward with the dollars entrusted to it by taxpayers and through its business operations has a positive impact on the local economy.

Annex i: Acknowledgments

This study was commissioned and funded by The Metro Parks Foundation on behalf of Metro Parks, Serving Summit County.

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Special Thanks go to Metro Parks, Serving Summit County volunteers and staff for their help with collecting data and the many administrative needs of the project

Sincere Appreciation is expressed to Jeanette Quinn, Administrative Assistant, The University of Akron for facilitating meetings, communications, and assistance with administrative needs of the project.

The following individuals were generous of their time and expertise in sharing with us the invaluable resources of their knowledge and experience as well as critical data and consultation:

Peter Harnik, Director, Center for City Park Excellence, Trust for Public Land
Vincent Zampelli, Water Pollution Control Division, City of Akron
Thomas Smith, Water Pollution Control Division, City of Akron
Michael Brehob, Water Pollution Control Division, City of Akron
Robert Curtis, Park Biologist, Natural Resource Management Dept., Metro Parks, Serving Summit County
Eric Baker, GIS Analyst, Watershed Programs Dept. Northeast Ohio Regional Sewer District
David Kelly, Summit County Engineer's Office
James Mahon, Akron/Summit Convention & Visitors Bureau
Melinda Huntley, Ohio Travel Association
Nathan Eppink, Chief of Marketing and Communications, Metro Parks, Serving Summit County

These individuals provided indispensable assistance, breathing life into this project:

Neal Hess, Chief of Special Projects, Metro Parks, Serving Summit County
Deborah Koral, Koral Law Offices, Ltd.
Rebecca Campbell, Senior Grants Coordinator, The University of Akron

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