

THE IMPACTS OF CENTRAL OHIO TRAILS

June 2015



The Impacts of Central Ohio Trails

**Prepared for the
Mid-Ohio Regional Planning Commission (MORPC)
And the
Central Ohio Greenways and Trails Group (COG)**

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TRAIL COUNTS



USER SURVEYS



PERSONAL
INTERVIEWS



PROPERTY VALUE
ANALYSES



TRAIL COST
ANALYSES

The Impacts of Central Ohio Trails

Executive Summary

The Mid-Ohio Regional Planning Commission (MORPC) promotes a balanced transportation system for the Central Ohio region that includes greenways and multiuse trails used by Central Ohio residents for bicycling and walking. In 2014, MORPC and the Central Ohio Greenways and Trails Group (COG) determined the need for more thorough information about the impact of trails in the region and commissioned this study, “The Impacts of Central Ohio Trails.” To complete this study, MORPC, COG, and the research team conducted counts of trail users, intercept and online surveys of trail users, interviews of local leaders about the importance of trails in the region, analyses of property values near trails, and an analysis of the costs of trail construction and maintenance.

The results show that trails provide many values to local residents and communities. Some of these values can be measured in dollars; others cannot. Summarized most simply, Central Ohio trails enhance the lives of thousands of Central Ohio residents who travel millions of miles on them annually for recreation, fitness and health, commuting, and other purposes. Trail users value trails, visit them frequently, are satisfied with management by local agencies, and want greater connectivity for bicycling and walking throughout the region. Specific findings include:

- COG trails are heavily used. Analyses of automated counts show that people travel nearly 12 million miles annually on 10 trails in the region.
- Many trail users visit trails three or more times per week, their typical visit is between one and two hours long, and they visit multiple trails in the network. Most of the users are middle-aged; nearly three-fourths have college or graduate degrees, and more than half report household incomes above \$75,000 per year. Nearly half visit with friends, and a significant proportion visit with children, indicating trails serve social purposes and meet family needs.
- About one-fifth of users say they spend modest amounts of money, typically between \$15 and \$20 for refreshments and dining, on a trail visit. Across all trail users, this result indicates an average expenditure by individual trail users of about \$3 per visit.
- Trail enthusiasts, especially bicyclists, rated trail surface, traffic safety, free-flowing traffic, and intersection safety as the most important physical characteristics, and they reported satisfaction with management of each of them.
- Analyses of written comments by participants in the on-line survey show that users believe the trails are well-maintained facilities that provide safe access and connectivity to destinations throughout Central Ohio. When asked about needed improvements, participants emphasized greater connectivity, particularly east-west routes that provide better access to destinations like parks and links to roads for commuting to employment.
- Regional leaders echoed survey results: trails provide value to their communities, increase connectivity and access to destinations, produce positive economic impacts, help attract and retain talent, and can contribute to the economic vitality and health of the region in the future.
- Analyses of more than 45,000 residential property sales near trails in Franklin and Delaware Counties show there are no adverse effects on prices associated with proximity to trails.
- The costs of trail construction and maintenance in Central Ohio are consistent with costs reported nationally.

Overall, these results provide the most complete assessment of trail use and the most detailed profile of trail users compiled for Central Ohio. They provide a firm foundation for planning to meet the growing needs of Central Ohio residents. Elected officials have new measures of the volume of trail use, the preferences of trail users, and the costs of trails to consider when deliberating future investments. Public managers have new information about user satisfaction with trail management to guide facility maintenance and investments in treatments to improve traffic safety. Regional business leaders and developers have new information, including data on the demographics of trail users and their expenditures, to inform business decisions. Health care providers have new evidence that trails are locations of choice for the Central Ohio population to exercise and improve health. Nonprofit and philanthropic funders have new data to gauge the potential results of investments in new trail facilities across the region. Property owners and realtors have solid evidence that home values are not affected adversely by trails. Finally, and perhaps most importantly, the residents of Central Ohio been engaged directly in shaping the future of the trails they value and use.

The Impacts of Central Ohio Trails

1. Introduction

The Mid-Ohio Regional Planning Commission (MORPC) promotes a balanced transportation system for the Central Ohio region that meets the needs of all users, including bicyclists and pedestrians. MORPC recognizes the importance of trails in the regional transportation system and the critical roles they play in meeting the recreational, fitness, commuting, and health needs of Central Ohio residents. As part of its transportation planning activities, MORPC has invested in the development of a comprehensive trail system and coordinates the efforts of the Central Ohio Greenways and Trails Group (COG), a coalition of local municipal, park district, and nonprofit leaders that promotes trail development in the region and coordinates trail development efforts with stakeholders. During the past 10 years, few regions in the country have been more aggressive than Central Ohio in moving towards becoming a first-class biking and walking destination. With robust investments in trail infrastructure, a heavily used trail network, the second largest urban university population in the country, a growing number of tourists, and an expected addition of 500,000 residents to the region in the next 40 years, the Central Ohio Greenway network is poised to become one of the premier trail systems in the U.S.

MORPC and COG have collaborated on studies to inform trail development, including trail counts and informal surveys of trail users and other stakeholders. These studies have shown that thousands of people use COG Trails (Figure 1). These studies also have supported expansion and connection of trails throughout the region, particularly Franklin and Delaware Counties.¹ COG also maintains a web page that includes maps of trails, information about trails, and resources to support trail development and use: <http://www.centralohiogreenways.com/index.php/maps>.

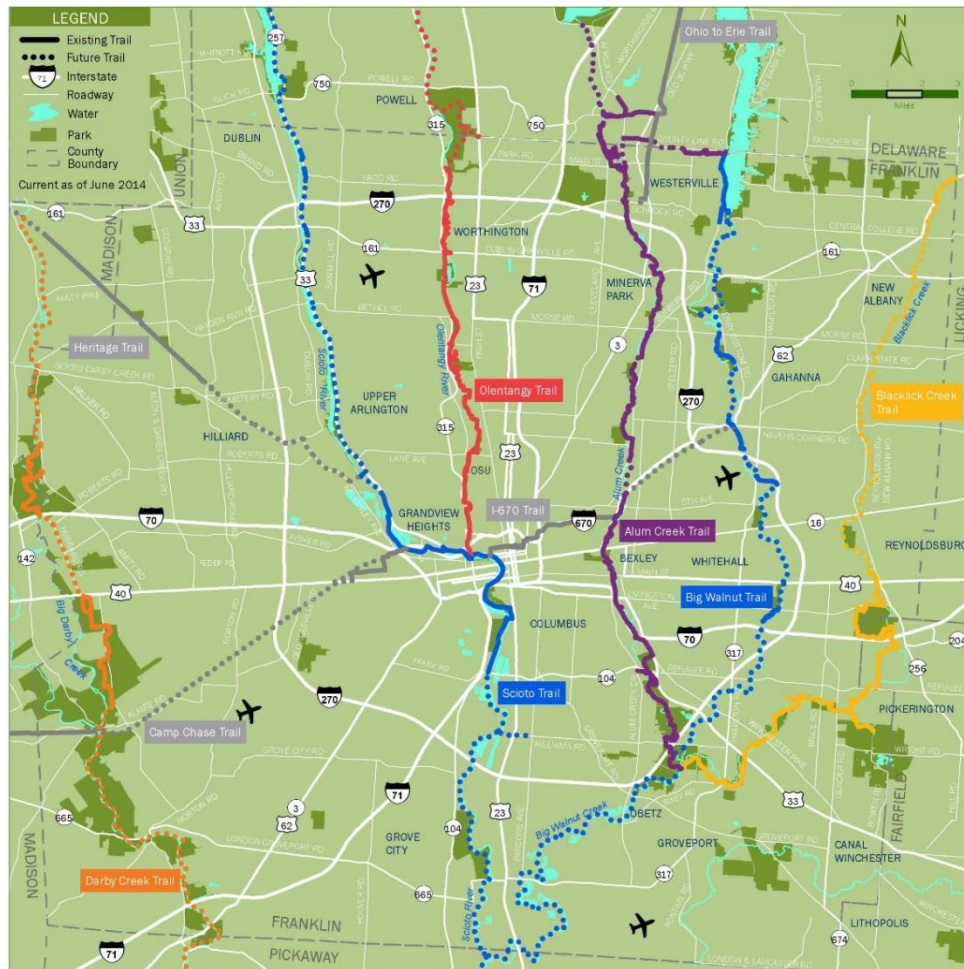
In 2014, MORPC and COG determined the need for more thorough information about the impact of trails in the region and commissioned a study on the economic and other benefits of trails. The principal goal of this study was to generate valid and reliable information about the values of trails to share with local business leaders and developers, government decision-makers, residents, and other stakeholders who are working together to develop and manage trails in the region. Secondary project goals were to generate information that agencies can use to support applications for funding, develop trail-related performance measures, and inform operations and maintenance of the growing trail system. To accomplish these goals, MORPC, COG, and the research team completed counts of trail users, intercept and online surveys of trail users, interviews of local leaders about the importance of trails in the region, analyses of property values near trails, and an analysis of the costs of trail development and maintenance.

This report, "The Impacts of Central Ohio Trails," summarizes the findings of this study. In the context of public infrastructure such as trails, the idea of value refers to the importance, worth, or usefulness of the infrastructure. This study shows that trails provide many values to local residents and communities. Some of these values can be measured in dollars; others cannot. Summarized most simply, Central Ohio trails enhance the lives of thousands of Central Ohio residents who travel millions of miles on them annually for recreation, fitness and health, commuting, and other purposes. Business, health, and other local leaders see trails as a key strategy for attracting and retaining talent and for creating the vibrant, connected communities essential to the region's economic future. Users are satisfied with trail operations and maintenance and believe trails are

¹ MORPC and COG serve a 15 county region including Franklin, Delaware, Licking, Fairfield, Pickaway, Madison, Union, Marion, Morrow, Knox, Perry, Hocking, Logan, Fayette, and Ross Counties. This report focuses on trails in Franklin and Delaware Counties.

well-managed. Despite concerns expressed by some property owners that trails may reduce property values, analyses of thousands of residential property sales near trails show there are no negative effects. Costs for trail construction and maintenance are consistent with costs reported nationally. A challenge for the future will be to meet the needs of residents who desire new trails that increase connectivity throughout the region.

Figure 1. COG Trails



This report is organized around major components of the study. Chapter 2 documents the use of Central Ohio Trails. Chapters 3 and 4, respectively, summarize the results of intercept and online surveys of trail users. Chapter 5 presents findings from interviews of business, health, and other leaders in Central Ohio. Chapter 6 summarizes the analyses of property sales near trails, and Chapter 7 summarizes trail construction and maintenance costs. Chapter 8 presents conclusions. Additional details related to each element of the study are included in a series of technical memoranda submitted separately to MORPC by the research team.

2. The Use of Central Ohio Trails

Trails are built to be used, and the most important indicator of the value of a trail may be the level of use it receives. MORPC and its local partners historically have counted trail users manually and with automated monitors at a number of locations in the region. Their results have shown that trail use is significant and that thousands of people use COG Trails annually. Previous monitoring efforts have not included all COG trails, however, nor have they measured volumes of use throughout the entire length of individual trails. To provide more comprehensive information about use of COG trails, MORPC, COG, and the research team collaborated to expand trail traffic monitoring in Central Ohio and to develop procedures for characterizing traffic flows on ten GOG trails.

2.1. Approach to Comprehensive Regional Trail Traffic Monitoring

The goal of the expanded monitoring program was to produce estimates of annual average daily trail traffic (AADTT) and trail miles traveled (TMT) for ten COG trails that form a 111-mile trail network in Central Ohio. The approach to monitoring generally followed guidelines and procedures outlined by the Federal Highway Administration (FHWA) in Chapter 4 Traffic Monitoring for Non-motorized Traffic of the *Traffic Monitoring Guide* (TMG; FHWA 2013). Steps in the monitoring, which are analogous to procedures used in vehicular traffic monitoring to produce estimates of annual average daily traffic (AADT) and vehicle miles traveled (VMT), included seven major steps:

1. Selection of monitoring devices;
2. Selection of continuous reference monitoring locations;
3. Segmentation of the trail network for short-duration monitoring;
4. Short-duration monitoring on segments without permanent monitors;
5. Data cleaning, quality assurance, and adjustment;
6. Derivation of factors for extrapolation of short-duration counts and estimation of AADTT; and
7. Calculation of trail miles traveled (TMT) by multiplying the segment AADTT times the trail segment length.

All monitoring was completed using either passive infrared (TRAFx ©) or active infrared (TrailMaster ©) monitors owned by MORPC and COG partners. Six existing monitoring locations were designated as reference monitoring locations for purposes developing factors for extrapolating short duration counts (Table 1). Use of these locations with permanent counters as reference monitoring sites was efficient and enabled MORPC to maintain an historical record of trail use at these locations over time.

Table 1. Permanent Reference Monitoring Locations

Trail Segment (Number)	Agency	Segment Description
Scioto Trail (106)	Columbus	North Bank Permanent
Alum Creek Trail (310)	Columbus	Nelson Park Permanent
Olentangy Trail (503)	Columbus	Worthington Hills Permanent
Olentangy Trail (506)	Columbus	Antrim Permanent
Olentangy Trail (509)	Columbus	Northmoor Permanent
Heritage Trail (801)	Metro Parks	Heritage Trail Permanent



For purposes of sampling and conducting short-duration counts, MORPC and its partners divided the 10 trails into 67 trail segments using criteria such as access points, intersections, and population density (Table 2). The goal was to establish segments with relatively uniform traffic flows so that estimates from short-duration monitoring are representative of the entire segment. The mean segment length over the entire network was 1.7 miles.

Table 2. Trail Segments in the COG Trail Network

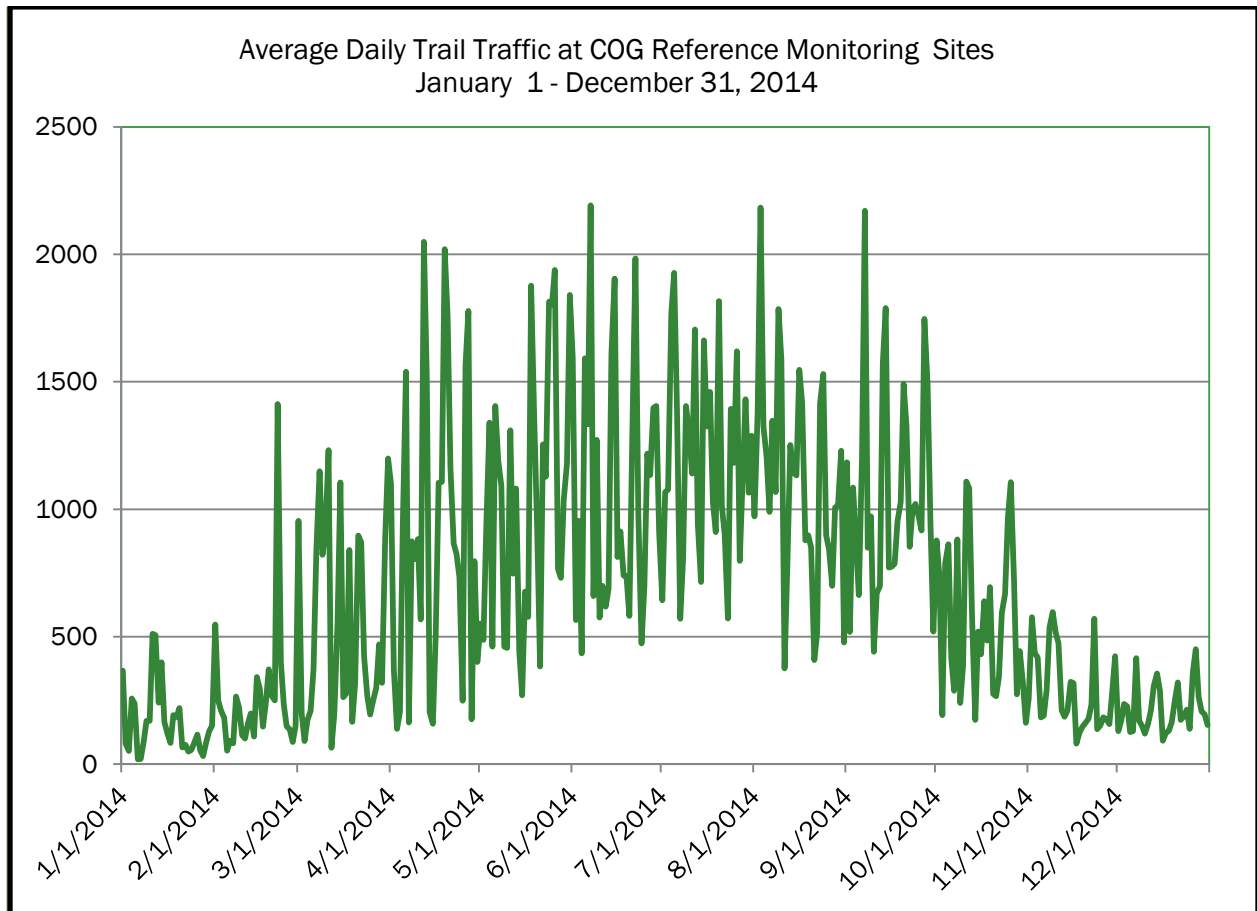
Trail	Number of Segments	Trail Length	Mean Segment Length
Scioto Trail	8	8.3	1.0
I-670 Trail	3	2.9	1.0
Alum Creek Trail	14	21.1	1.5
Blacklick Creek Trail	10	20.4	2.0
Olentangy Trail	13	12.9	1.0
Ohio to Erie Trail	9	17.1	1.9
Big Walnut Trail	5	6.3	1.3
Heritage Trail	2	6.1	3.1
Darby Creek Trail	2	8.1	4.1
Camp Chase Trail	1	7.5	7.5
Total	67	110.8	1.7

MORPC, Columbus and Franklin County Metro Parks, the Rails to Trails Conservancy, and the cities of Columbus, Hilliard, Westerville, and Gahanna conducted short-duration counts at 61 locations following procedures recommended by FHWA (2013). Short-duration monitoring was initiated in April 2014 and concluded in October 2014. A minimum of seven days of monitoring was completed on most segments. To ensure that estimates of trail use were as accurate as possible, the research team followed a set of protocols for data cleaning, quality assurance, and correction or adjustment. These protocols included confirmation of valid counts, correction for systematic undercounts associated with users passing the monitors simultaneously, and for the reference sites, imputing estimates of daily traffic for days when actual, valid counts were not available.

To obtain estimates of AADTT, the research team adapted standard procedures used in vehicular traffic monitoring that involve using factors that describe traffic patterns at reference monitoring stations to extrapolate sample counts from short-duration monitoring. This approach is possible because trail traffic volumes vary consistently in response to weather, day-of-week, and hour-of-day. By assuming that people respond similarly to weather on trails across the network, reasonably accurate measures of annual traffic can be obtained from the short duration samples. Figure 2 is a graph of average daily trail traffic across the six reference monitoring sites. Day-of-year factors were developed from these data and used to extrapolate monitoring results at each of the 61 short-duration monitoring sites. Additional methodological details and information about monitoring procedures are summarized in technical memoranda available from MORPC.



Figure 2. Average daily trail traffic at six reference monitoring sites

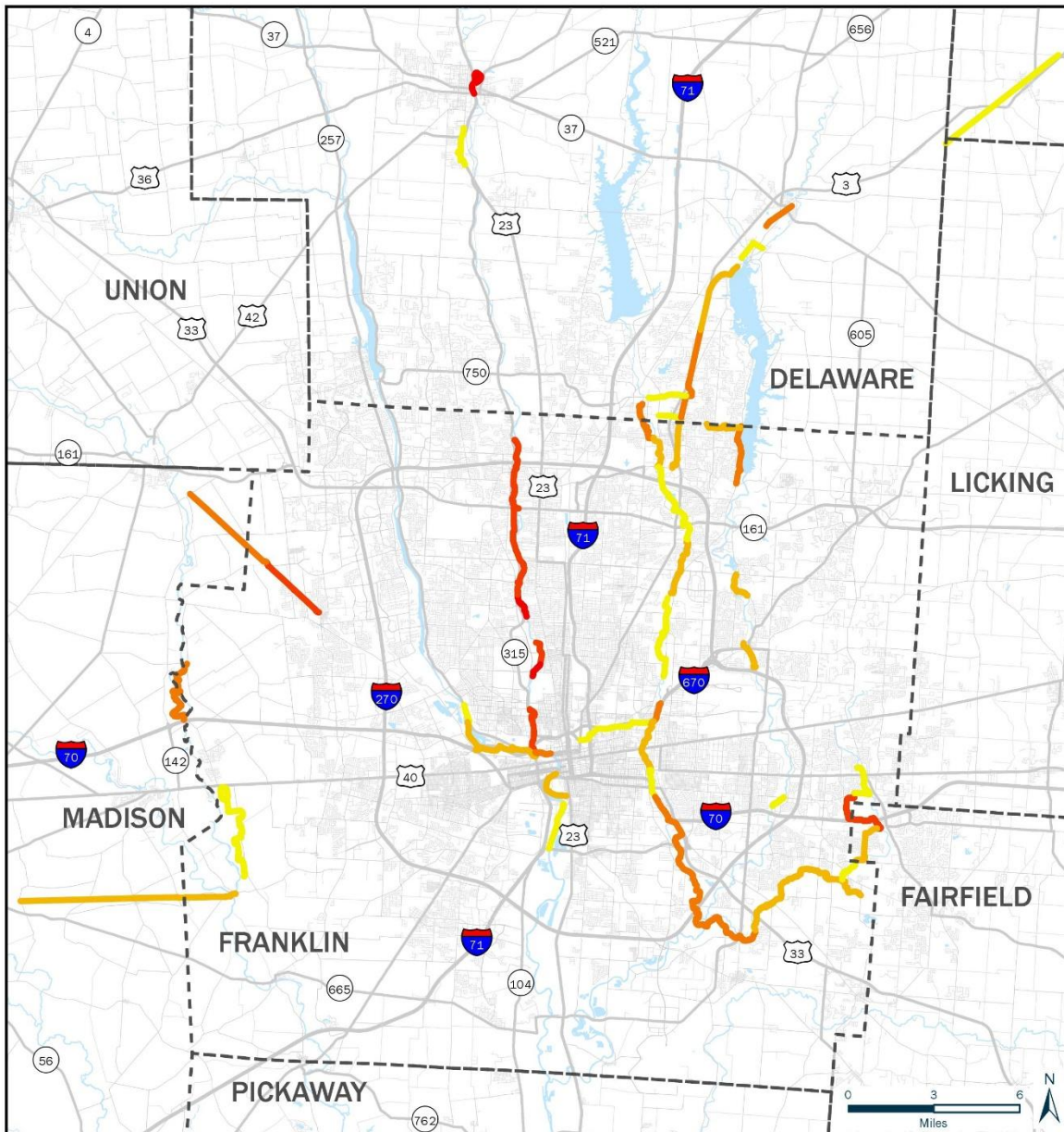


2.2 Key Monitoring Results: Annual Miles Traveled on the COG Trail Network

Monitoring results show that COG trail users traveled approximately 11.9 million miles on the 10 trails in the COG trail network. Key results are summarized in Figure 2 and Table 3. Across all segments, AADTT ranged from a low of 13 on a segment of the Ohio to Erie Trail to a high of more than 1,400 on a segment on the Olentangy Trail. The mean and median AADTT across all trail segments were approximately 330 and 220, respectively. AADTT was highest in the summer months of June, July, and August, with July traffic being highest at the majority of sites. Across locations, summertime average daily trail traffic generally is between 1.5 to 2 times AADTT.

Variation in AADTT across trails and trail segments is illustrated in Figure 3. Average daily trail traffic volumes are highest on the Olentangy Trail in Central Columbus but also are high on several other trails in outlying suburban areas. The differences in AADTT and miles traveled reflect many factors, including nearby population density, accessibility, connectivity, and trail length. For example, trail segments in neighborhoods with higher population densities tend to have higher use, and very short trails that are not connected to the network tend to have lower use. Taken together, the results reflect demand for trails throughout the region.

Figure 3. Variation in Annual Average Daily Trail Traffic by Trail Segment



Average Annual Daily Trail Traffic
Impact of Trails Study

AADTT
12 - 115
116 - 261
262 - 516
517 - 816
817 - 1403



Source: ODOT, MORPC, University of Minnesota Humphrey School of Public Affairs

The information shown on this map is compiled from various sources available to us which we believe to be reliable. N:\ArcGIS\LOCAL\Economic Impact of Trails Study\AADTT_document.mxd 6/25/2015



Estimates of miles traveled on each of the 10 trails are presented in Table 3. These estimates, which reflect both the relative traffic volumes and the length of each trail, indicate that the Olentangy trail is used most intensively, followed by the Blacklick and Alum Creek Trails.

Table 3. Annual Miles Traveled on COG Trails

COG Trail	Annual Trail Miles Traveled (1/1/14 - 12/31/14)
Alum Creek	1,700,000
Big Walnut	550,000
Blacklick Creek	2,062,000
Camp Chase	552,000
Darby Creek	541,000
Heritage	1,195,000
I670	37,000
Ohio to Erie	1,192,000
Olentangy	3,464,000
Scioto	575,000
Total All Trails	11,900,000

2.3 Implications for Planning and Policy

MORPC and COG partners were successful in monitoring trail traffic on the entire 111-mile COG trail network. The monitoring initiative, which yielded new estimates of AADTT and TMT for all segments in the network, provides the most detailed understanding of trail use ever available in Central Ohio and is among the most comprehensive monitoring efforts completed on a regional trail system in the United States.

- Park board members and agency directors can use the two performance measures (AADTT and TMT) as benchmarks to assess changes in trail use over time and as evidence in support of funding and other proposals for trail improvements.
- Trail planners and consulting engineers can calculate level-of-service measures (i.e. volume to capacity ratios) to determine the need for trail improvements such as trail widening.
- District and agency engineers can review traffic volumes at intersections to determine the need for changes in traffic controls.
- Maintenance staff can review hourly traffic patterns when scheduling maintenance activities to disrupt the fewest number of users.
- Facility managers can assess whether winter traffic volumes warrant continued plowing of snow.
- Marketing and communications staff can report new information about trail use.
- Users can schedule trail activities to avoid periods of peak congestion.



MORPC and its partners can build on these results to improve future monitoring and produce better information about trail use. To increase understanding of trail use, COG partners can:

- Establish additional permanent monitoring stations on other trails that include different traffic patterns.
- Review trail segments to establish need for re-segmentation by eliminating segment breaks that join segments with similar flows and breaking segments where there are large differences in segment volumes.
- Continue to validate monitors periodically.
- Consider investment in new monitoring devices for permanent monitoring sites that provide mode split and transmit data wirelessly to servers for analysis.



3. A Profile of Trail Users: User Patterns, Characteristics, and Expenditures

People value trails for many different reasons such as recreation, health, and transportation, and they use trails to access parks, work, and shopping. MORPC, COG, and the research team collaborated to design and administer an intercept survey to obtain information from trail users about their use of Central Ohio trails, the reasons they use trails, and the expenditures they make when visiting trails. The goal of the survey was to produce a detailed profile of trail users in Franklin and Delaware Counties, including information about user patterns and expenditures.

3.1 The Intercept Survey and Method of Administration

The intercept survey had 19 questions and required only a few minutes to complete. Most questions were about user patterns and behaviors and simply required the respondents to check an answer category. One question was “open-ended” and allowed readers to share their opinions about the trails. The questions focused on the characteristics of the trail visit on the day the respondent was surveyed. Specific topics on the survey included the users’:

- main activity on the trail (e.g., bike, walk, run, skate);
- purpose for visiting the trail;
- time and distance traveled on the trail;
- time and distance traveled to the trail;
- mode of transportation to the trail;
- use of the trail alone or with others and children;
- expenditures made while on the trail visit,
- frequency of trail use during the previous week;
- number of different trails used;
- demographic characteristics including gender, age, education, income, and zip code, and
- opinions (i.e., anything else in the open ended questions).

MORPC, COG, and the research team designed a sampling plan for 19 locations on five different trails believed to be used by a wide cross-section of Central Ohio trail users. The five trails surveyed were the Alum Creek Trail, the Blacklick Creek Trail, The Heritage Trail, the Olentangy Trail, and the Scioto Trail.

The intercept survey was conducted at trail heads and access points on 39 days between July 28, 2014 and September 7, 2014 in one to three hours blocks between 7:00 a.m. and 7:00 p.m. This approach to sampling the trail users (formally called a systematic sample) is believed to generate a sample that is representative of trail users, but it has several limitations relevant to interpretation of results. The sample is likely to include some “self-selection” bias that may be associated with likelihood of different trail users’ participation in the survey. For example, cyclists commuting to work may have been less willing than people on a leisurely walk to participate in the survey. The extent to which this sample differs from the “true” population of trail users cannot be determined.

3.2 Intercept Survey results.

A total of 1,282 trail users completed the intercept survey. Most respondents were cyclists (60%); the proportions of runners and walkers were comparable (21% and 19%, respectively). The vast majority of respondents were visiting the trails for recreation, exercise, or both (91%); seven percent said that their visit was primarily for commuting or shopping. Nearly two-thirds of the respondents said they had or would be using the trail for more than one hour (Figure 4), and



more than 45% said they had or would travel more than 10 miles on the trail (Figure 5). The most common duration of use reported by respondents was between one and two hours (37%).

Figure 4. Estimated Time Spent on Trail (n=1,277)

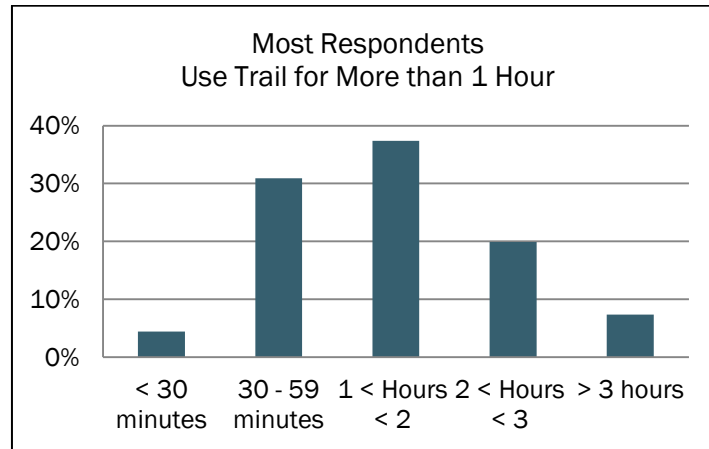
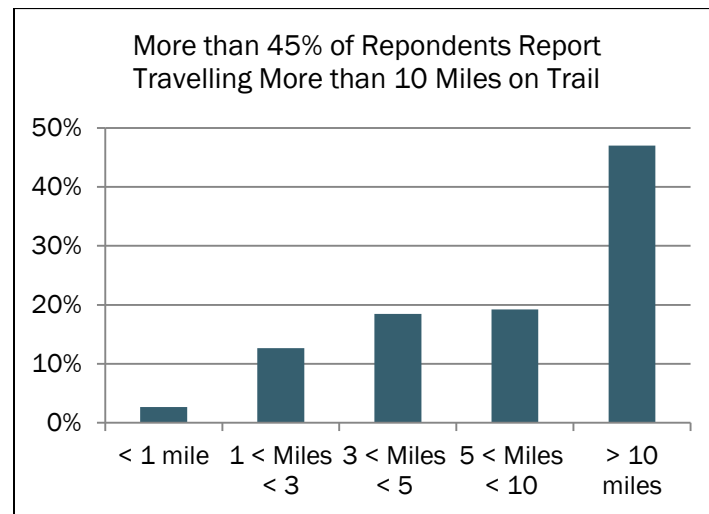


Figure 5. Estimated Distance Traveled on Trail (n=1,271)



Most users visit the trail multiple times per week. Two-thirds of respondents said they had visited three or more times per week and 10 percent said they visit daily or more often (Figure 6) Nearly two-thirds of the respondents took less than 15 minutes to get to the trail, and 83% reported accessing the trail within 30 minutes. The majority of respondents either cycled or drove to the trail. Only about one-third reported living within one-half mile of the trail. The majority of trail users (52%) said they were using the trail by themselves, but nearly half said they were visiting with others in groups of two or more. Approximately nine percent said they were visiting with children. About one in five respondents said they had or would make trail related expenditures during their visit. Their reported average expenditure was approximately \$17.60. Averaged across all respondents, the mean amount spent per trail visit was about \$3.00.



The majority of respondents were male (60 percent; Figure 7). Approximately 36 percent were between the ages of 50 and 64; an additional 27 percent were between the ages of 35 and 49 (Figure 8). The majority were well educated: 35 percent reported having a bachelor's degree, and slightly more reported having a graduate degree (39%; Figure 9). More than half the respondents reported annual household incomes greater than \$75,000.

Figure 6. Number of Visits in Past Seven Days (n=1,257)

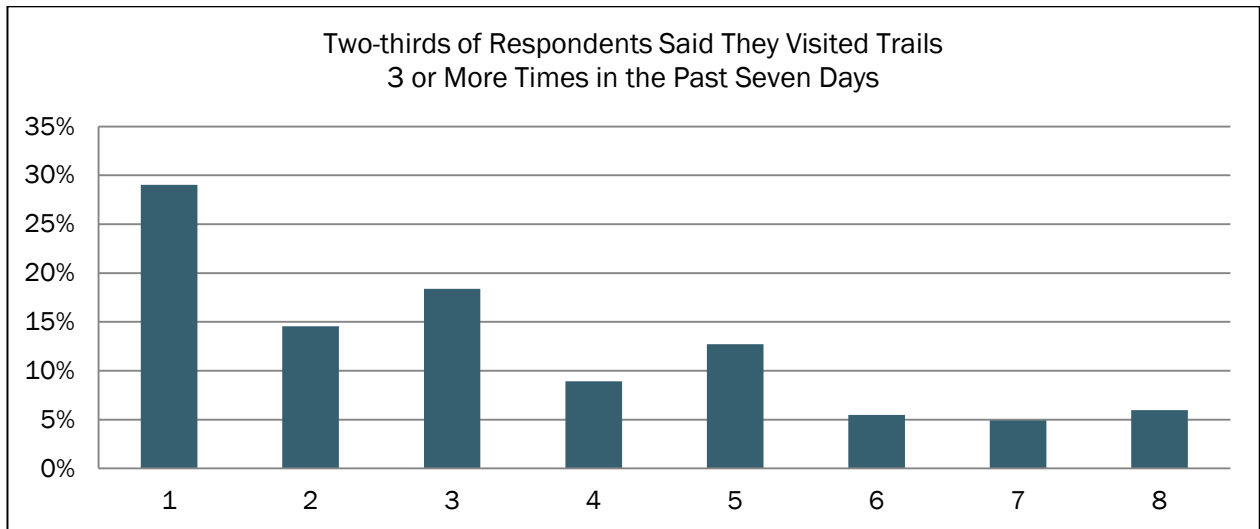


Figure 7. Gender of Intercept Survey Respondents (n=1,242)

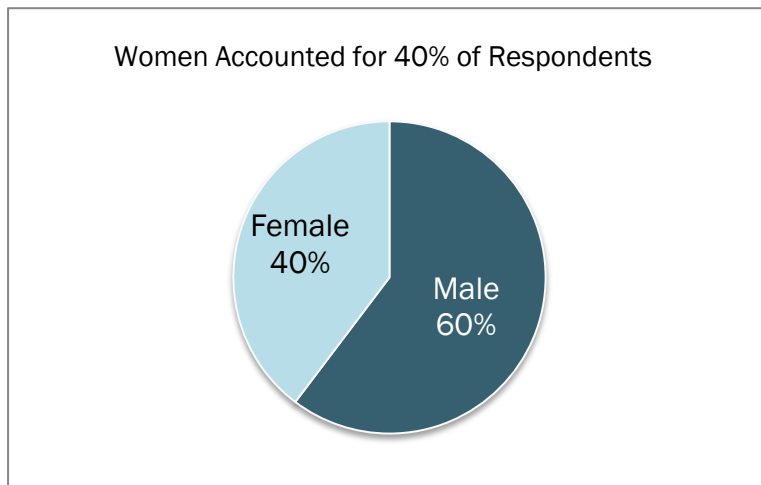


Figure 8. Age of Intercept Survey Respondents (n=1,230)

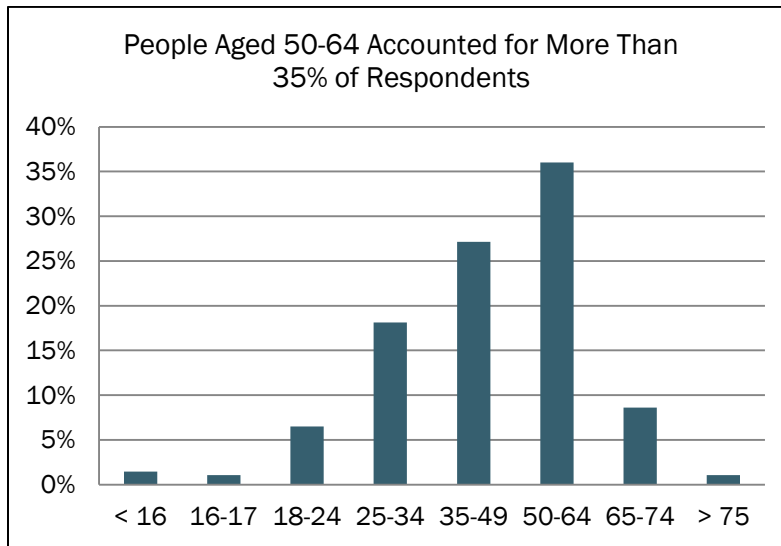
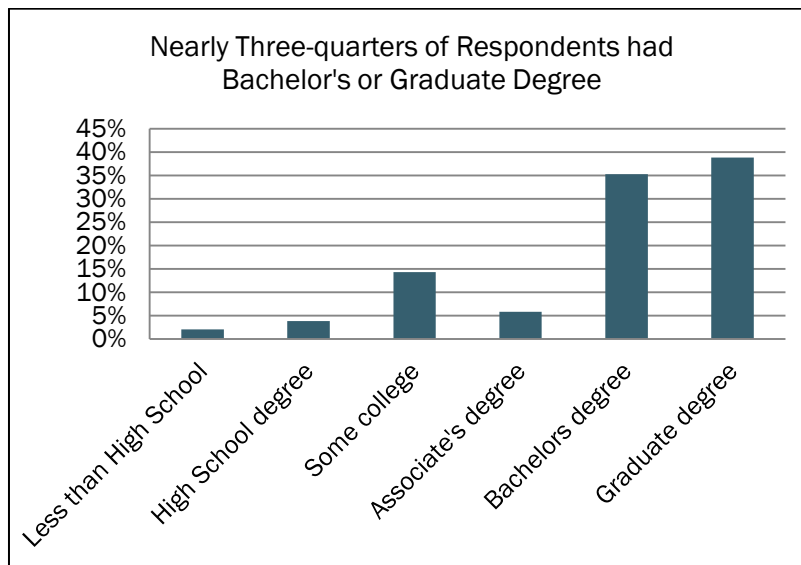


Figure 9. Education of Intercept Survey Respondents (n=1,262)



3.3 Implications for Policy and Planning

The results of the intercept survey provide a detailed profile of Central Ohio trail users, their patterns of trail use, and their likelihood of making expenditures while visiting the trail. These results show that users value the trails in many ways: as destinations of choice for a variety of activities and purposes, including recreation, fitness, health, and commuting. These results can inform a variety of policy, planning, and management decisions.



- The majority of users are male cyclists who are well educated and have above average incomes. They are likely to cycle to the trail, travel more than 10 miles on the trail, be on the trail for longer than an hour, and visit the trail multiple times per week. Cyclists are more likely than other users to spend money when visiting the trails. These facts have implications for marketing the trails and for collaboration with local businesses interested in serving this demographic.
- The fact that cyclists are cycling to trails and then traveling substantial distances on them (e.g., greater than 10 miles) underscores the need for connectivity and providing longer, uninterrupted segments for travel. Regional and local planners may want to prioritize connectivity with other trails and with on-street bicycle infrastructure in future plans.
- About 20 percent of users reported spending money during their visits; the average amount they reported spending was between \$17 and \$18. When aggregated across users, the total amount spent is substantial. When working with local businesses, planners can use these estimates along with trail traffic counts in marketing and other studies to assess the feasibility of new initiatives or marketing programs.
- The results indicate that trail users likely are receiving health benefits from their trail use. The Centers for Disease Control recommends that adults get a minimum of either 150 minutes of moderate intensity aerobic activity (e.g., brisk walking) every week, 75 minutes of vigorous-intensity aerobic activity (e.g., jogging or running) every week, or some combination of the two. Most trail users meet these guidelines: approximately two-thirds of users reported visiting the trail three or more times in the previous week, and a majority reported spending more than an hour on the trail during each visit. The existence of the trail cannot be considered the causal factor in determining their exercise and associated health benefits – if the trails were not available, the trail users may have been active and exercised elsewhere. However, the fact that they choose to use trails for their activity is an indicator of the value the users place on exercising on trails and the important role trails play in supporting community health.
- The vast majority of users report using the trails principally for recreation and exercise, but a significant proportion uses the trails as transportation infrastructure for utilitarian purposes, including commuting and shopping. These types of uses underscore the need to further integrate the trail system with transportation infrastructure. By focusing on connectivity and access to destinations such as major employment centers, planners may be able to foster additional trail use for commuting and shopping purposes.
- The results also indicate that trail use often is a social activity: nearly half visit the trail with others. This fact has implications for marketing trails from both recreational and health perspectives. Similarly, a small but significant proportion of users visit with children. Policy makers, planners, and trail managers may want to explore strategies for marketing trails as family-friendly destinations and for increasing use by children as a means of fostering longer-term trail use.
- Finally, the facts that most trail users live more than one mile from the trails and that a large proportion drive to the trails has implications for trail planning. Parking at trailheads or near other access sites is needed for those who drive. Planning to provide better connectivity or access to trails may reduce the perceived need to drive to trails.



4. An Online Survey of Trail Users: User Preferences and Perspectives

People who use trails have deeply-held beliefs and strong opinions about the COG trail network, the values it supports, and actions that can be taken to enhance the trail system. MORPC, COG, and the research team collaborated in the design and administration of an online survey to complement and supplement the trail intercept survey. The goal was to obtain more detailed information from trail users than is possible from short intercept surveys, including additional information about expenditures and opinions about trail management, maintenance, and other factors that affect the quality of trail and the values that they support.

4.1 The Online Survey and Method of Administration

The online survey included 31 questions, including questions about trail use comparable to those on the intercept survey and additional questions to provide more detailed information about user activities and perspectives. Specific questions on the survey inquired about patterns of trail use, ways of accessing the trail, trail-related expenditures, demographic characteristics, and opinions of management and maintenance of the trails. The online survey included two sets of Importance – Satisfaction questions designed to measure both how important specific trail characteristics are and how satisfied users are with each characteristic. Three open-ended questions asked trail users what they liked best about COG Trails, one suggested improvement for COG Trails, and if there was anything that they would like to add.

MORPC, COG, and the research team reached out to trail users through multiple methods to maximize participation in the study, including contact with bicycle organizations and other trail user groups. The online survey was open from July 27, 2014 to August 31, 2014 to coincide with administration of the intercept survey and the trail user counts. The results of the online survey complement the intercept survey and provide more detailed information about the region's most avid trail users, their patterns of trail use, and their perspectives on trail management.²

4.2 The Online Survey Results

Individuals submitted 672 completed online trail surveys. Participants in the survey were asked to identify both the trail they used most often and all the trails they had used in 2014. The majority of survey respondents (56 percent) selected the Olentangy Trail as the trail they use most often, followed by the Alum Creek Trail (Table 4). Most trail users reported using more than one trail: more than 80% and 50%, respectively, had visited Olentangy and Alum Creek trails. Responses to both questions indicated that the Scioto Trail was the third most visited trail among participants in the survey.

² The online survey involved the type of sampling known as convenience or snowball sampling and allowed participation by anyone interested in trail use. This approach to sampling is useful because it reaches people who care deeply about particular subjects, in this case, trail use. The major limitation of this approach is that it generates a non-random sample and the results cannot be generalized to the entire population of trail users. This limitation is referred to as self-selection bias. Despite this limitation, the results provide insight into the preference and perspectives of trail users, the principal COG constituency.



Table 4. Trails Used Most Frequently by Online Survey Participants

Trail	Most Used Trail (n=662)
Olentangy	57.3%
Alum Creek	14.4%
Scioto	5.9%
Heritage	5.7%
Blacklick Creek	4.1%
Ohio to Erie	3.6%
Camp Chase	3.0%
Big Walnut	2.3%
Darby Creek	0.9%
I-670	0.5%
Other	2.0%
No response	0.5%

Consistent with the intercept survey, the majority of participants said bicycling was their primary activity on the trail, and the vast majority said their primary reasons for using the trail were recreation and exercise.³ The amount of time spent and distance traveled on trail visits were similar: 41% said they typically spent between one and two hours on each visit. Other reported patterns of trail use such as distance traveled and mode used to get to trail also were comparable to the online survey but reflected greater participation by bicyclists.

Participants were asked more detailed questions of expenditures in the online survey than in the intercept survey because time was not as significant a constraint. Participants were asked about both purchases related to their most recent trip on the trail and if they had purchased any equipment, shoes, or clothing within the past year to use or wear when visiting the trail. Slightly more than one-fourth of participants said they had made purchases on their most recent trip (Table 5). Most of these expenditures were food and beverage related; the amounts were slightly higher than those reported in the intercept survey.

A much higher proportion of participants (60%) said they had purchased equipment, shoes, or clothing within the year that related to their trail use. These purchases included bicycles, bicycle trailers, bicycle accessories, bicycle racks, clothing, shoes, pedometers or bicycle computers, or other purchases (Table 6). The amounts reported for purchases of bicycles were substantial, exceeding \$1,000 on average for those who had purchased a bicycle. Most of the other items reported were for equipment and accessories related to bicycling.

In response to a third question about expenditures, nearly 40 percent of participants said they have used trails to get to grocery stores or markets. Among those trail users, one-third said they had done so within the past week, spending on average slightly more than \$46.

³ The proportion of cyclists in the online sample was higher than in the intercept survey because of self-selection by survey participants.



Table 5. Trail-related expenditures on most recent trip to trail

Item	Average Amount Spent by Trail Users Who Made Expenditures (n=168)	Average Amount Spent by All Respondents in Sample
Meals	\$22.38	\$3.78
Equipment Rental	\$9.52	\$0.45
Fruit or Energy Bars	\$7.00	\$0.75
Beverages	\$6.68	\$1.12
Ice Cream or Other Treats	\$3.03	\$0.21
Other	\$15.11	\$0.60

Table 6. Expenditures on equipment, clothing, and accessories related to trail use

Item	Average Amount Spent in Year on Equipment, Clothing, and Accessories by Those Who Made Purchase (n=402)	Average Amount Spent in Year on Equipment, Clothing, and Accessories by All Trail Users in Sample
Bicycle	\$1,075.91	\$200.51
Bicycle Trailers	\$168.73	\$11.76
Bicycle Accessories	\$155.83	\$59.97
Bicycle Racks	\$155.21	\$20.46
Clothing	\$139.60	\$54.36
Shoes	\$136.53	\$37.86
Pedometers or Bicycle Computers	\$100.39	\$15.82
Other	\$117.15	\$9.05

Participants in the online survey were asked to rate both the importance of and their satisfaction with 11 different trail characteristics such as trail surface and personal security. Participants rated most of the trail characteristics as important and indicated they were satisfied with all of them (Figure 10). On average, the trail characteristics rated as most important were trail surface, traffic safety, and free-flowing traffic, followed by intersection safety, trail maintenance, and personal security. The availability of parking and access to restrooms were ranked least important in this sample of users. Participants were most satisfied with the scenery and views, the availability of parking, the absence of litter and graffiti, and personal security. Although the availability of restrooms ranked low in importance, it also ranked lowest in satisfaction. Satisfaction with traffic flows, intersection safety, and traffic safety was on average lower than for other trail characteristics.

In comparison to both the general population of the region and the respondents to the trail intercept survey, the participants in the online survey were disproportionately male, white, well-educated, and with a higher income (Table 7). This outcome is associated with the method of survey administration and is illustrative of the demographics of the most avid and enthusiastic trail users.



Figure 10. Importance-satisfaction measures of trail characteristics

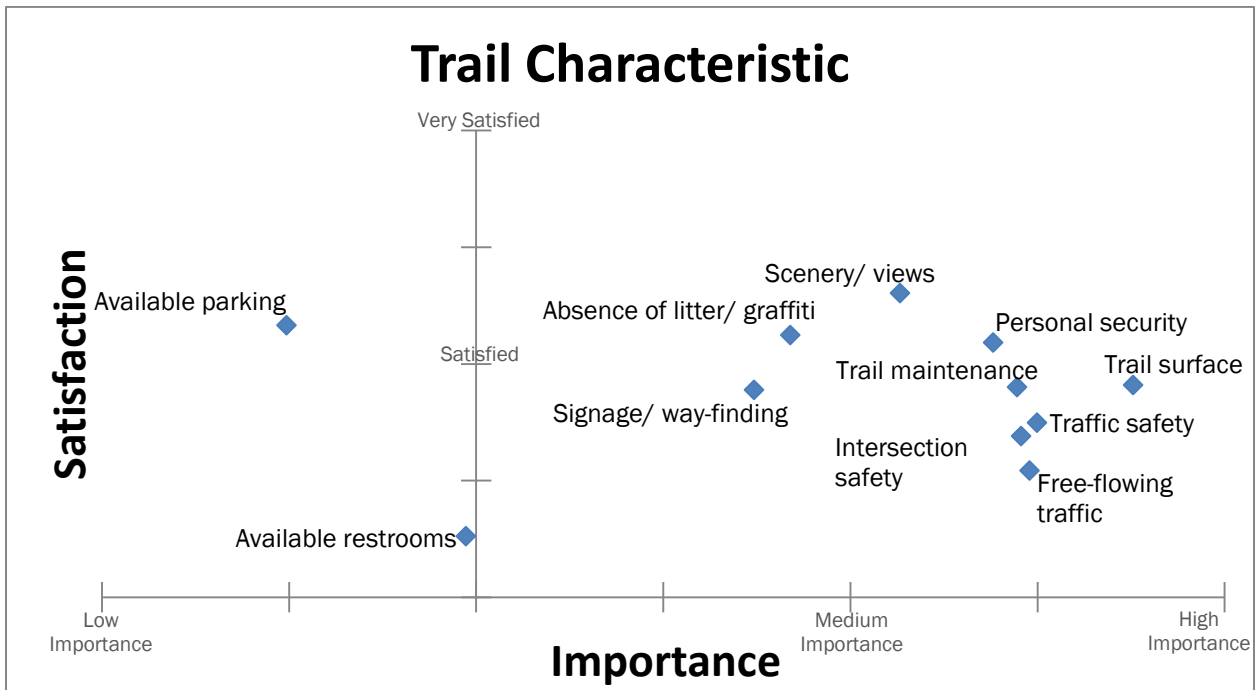


Table 7. Demographic characteristics of online survey participants

Demographic Question	Majority or plurality response category	Percent	Second most common response	Percent
Gender	Male	72 %	Female	28 %
Age	35 - 49	34 %	50 - 64	33 %
Level of Education	Bachelor's Degree	42 %	Graduate Degree or Higher	42 %
Race	White or Caucasian	92 %	Black or African American	2 %
Hispanic, Latino, or Spanish Origin	Not of Hispanic, Latino, or Spanish Origin	91 %	Hispanic, Latino, or Spanish Origin	1 %
Estimated Annual Household Income before Taxes	Greater than \$75,000	63 %	\$50,000 - \$74,000	18 %



4.3 Implications for Policy and Planning

The results of the online survey complement the intercept survey and provide additional, more detailed insight into the patterns of trail use and the priorities and preferences of the region's most engaged trail users. Although the respondents are disproportionately cyclists and the results cannot be generalized to the entire population of trail users, the results are useful because they provide insight into a key trail constituency.

- Many participants accessed the online survey through the local newspaper's bicycle blog or through the COG Facebook webpage. Their participation illustrates the particular concerns of bicyclists and other avid trail users. In general, their responses reflect their passion for Central Ohio trails and the high value they place on the many opportunities for recreation and exercise, including the connectivity they provide to parks and other destinations. The high proportion of responses from bicycle blog and COG Facebook page subscribers also suggests that these outlets can be useful in strategies to promote trail use within the community.
- The responses to the questions about trail-related expenditures suggest that it may be fruitful to explore strategies for increasing trail-related economic activity. Although only about one-fourth of participants had made purchases related to their most recent trip to the trail, and those that did reported spending modest amounts, larger proportions reported purchases of bicycles or expenditures for equipment or apparel directly related to their trail activity. These types of expenditures were much larger than expenditures associated with visits to the trail and are likely more important to the region overall. Given the disproportionately high incomes of trail users relative to the region as a whole, it is likely they will continue to have disposable income for trail-related activities. Collaboration with retail businesses to meet the needs of trail users could simultaneously serve the needs of established trail users, build support for trails, and strengthen local economic activity.
- The responses to the satisfaction-importance questions, coupled with responses to the open-ended questions, confirm that the trail users in this sample feel strongly about the trails, are satisfied with trail characteristics and access to amenities, and believe that the existing high quality of the trail system can be enhanced through development of greater connectivity. Several particular responses have implications for management. Continued attention to maintenance of trail surfaces is warranted, as is attention to trail safety, including crossings at trail intersections. Although responses indicate that additional parking is not a priority, the outcome likely reflects the disproportionate number of cyclists who completed this survey; thus this finding must be considered in light of the needs of walkers and joggers who may require parking if traveling from longer distances to reach trails. In general, given the possibility that those trail users who are most passionate about the trails may also be more likely to voice their criticisms, the overall positive ratings of trail conditions reflect positively on management of trails by agencies across the two counties.
- A key theme emerging from the analysis of the open-ended comments is that of connectivity. Trail users clearly value the connectivity to other trails, parks, and neighborhoods provided by the existing trail network. They want more connections, particularly east-west connections that will enable them to reach more neighborhoods and communities throughout the region. Future plans for the COG trail system should address strategies for increasing connectivity.



5. The Regional Roles of Trails: Perspectives of Central Ohio Leaders

Central Ohio leaders across all sectors recognize that public facilities, such as trails, add quality of life and economic value in the region to people's lives and their communities. These leaders also have unique insights into the challenges of providing and maintaining high quality public facilities. MORPC, COG, and the research team collaborated in the design and completion of a set of key informant interviews of regional business, government, health, and nonprofit leaders to obtain qualitative information about their perceptions of trails, the roles trails play in region, the values they provide to residents and the economy, and any possible concerns about trails. The goal of these structured, in-depth interviews was to obtain nuanced information about trails from influential key individuals who represent important constituencies and stakeholders in the trail development process and are in the position to support future trail development.

5.1 The Key Informant Interviews

The interview guide was designed to engage individuals in a free-flowing conversation about the values of trails in the region. The guide included 12 questions in open-ended format that allowed informants to speak at length about particular questions. Topics covered in each interview included:

- Perceptions of trails and the values they bring to a community;
- Concerns about trails and the impacts they may have on a community;
- Factors that affect people's use of trails, including barriers that need to be addressed to increase use;
- Factors that affect leaders' ability to develop and manage the trail system;
- Whether the informants' organizations considered proximity to trails important for their businesses;
- Whether the informants' organizations had made specific investments because of trails; and
- The long-term well-being of the region and the relative priority of trails given competing demands for public resources in the region.

MORPC staff, in consultation with COG and the research team, took principal responsibility for identifying key informants and securing their participation in the study. MORPC approached informants who represent key constituencies in the region that have specific interests in trails (e.g., owners of bicycle shops); interests in values served by trails (e.g., health professionals); and interests in the long-term future of the region (e.g., economic development organizations). Twenty-five individuals were interviewed. To facilitate analysis and interpretation of results, all interviews were conducted by a researcher from the University of Minnesota to ensure consistency in administration of the interviews.

The strength of the key informant methodology is that it generates understanding and insights that typically cannot be made with other methodologies such as general population surveys. Key informant interviews provide rich contextual information for policy-makers and are particularly useful in complex contexts where many stakeholders are relevant to potential outcomes.

The principal limitation of the key informant method is the converse of its strength: the insights that are generated cannot be generalized to a broader population because the participants are purposefully chosen and not selected randomly.

5.2 Results of the Key Informant Interviews

Integration and analyses of the key informants' responses resulted in five overarching themes:

- Trails add value to their communities;
- Connectivity among trails and to destinations is a priority;
- Crime and safety concerns are important to address;
- Economic impacts of trails include business activity and attraction and retention of talent; and
- Trails can contribute to the future economic vitality and health of the region.

While these five themes reflect the perspectives of all or a majority of key informants, quotes from individuals are particularly useful in illuminating the roles of trails and the values they support in the region.

Trails add value to their communities. Key informants agreed that trails add value in their communities. These values include recreation, health, connectivity, access to green space, transportation, and being an amenity that draws excitement to residential and business locations. Jeff Davis, owner of Café Brioso in downtown Columbus, observed, “[Trails] deliver customers to us in the morning just like the freeway does.” Eric Phillips, Director of Economic Development in Union County, added, “The ‘wow factor’ of trails and their access to schools, work, and business is a key factor for community development.”

Connectivity among trails and to destinations matters. Key informants stressed the importance of connectivity, both as strength of the existing system and as an area that needs to be improved. Mike Brown of Experience Columbus observed, “Connecting the plans [of the surrounding communities to Columbus] is critical to making a vital, vibrant system.” Brad Griffith with the Buckeye Interactive in New Albany echoed this theme: “If I have a request for local leaders, it would be to connect New Albany to other towns - Gahanna, Westerville, and central Columbus. These connections are very important to live and work here.” Similarly, Kimberly Moss, Senior Campus Planner at OSU concluded, “We have really good north/south connections, but not good east/west connections. If there are missing connections, people may choose not to use the trails.”

Crime and safety concerns are important to address. Twenty of the key informants indicated perceptions of safety and trail-related crime that need to be addressed to maximize the potential of trails. The concerns include both traffic safety and personal security. Fred Hahn, former Director of Dublin Parks, spoke of the recurrent need to address unfounded concerns about property-related crime and personal security: “That burglars use the trails to ‘stake out’ houses for a crime is an ongoing paranoia; crime is the biggest, most unfounded concern. The first thing we fall back on is our crime analysis: ‘Here are the records, now try to confirm your paranoia.’” Adrienne Joly, Deputy Director of Community Development in New Albany, identified strategies to address these issues: “Safety concerns always come up, so lighting, visibility, enforcement become points of discussion.”

Economic impacts of trails include business activity and attraction and retention of talent. Joe Eulberg, Vice President of Human Resources at Bob Evans, summarized this theme succinctly: “Trails are valuable because they create industry, not the least of which is tourism. And more and more people mention trails as a reason for wanting to live someplace.” Catherine Girves of Yay!Bikes made a similar observation: “Economic development will increase around the use of trails. When we schedule rides, people want to stop; we call these ‘cash bombs’ so people can intentionally spend money. Food is big, gift shops, too.”

Trails can contribute to future economic vitality and health of the region. Two-thirds of the key informants talked about the need for and importance of securing funding for future trail development. Eric Phillips commented, “This is not a political issue, it just makes sense. [Trails] are valuable to have in communities and a huge selling point for businesses to locate where employees have



access to other modes of transportation.” Heather Bowden, former Manager of CoGo, Columbus’s bike share program, summed up this perspective: “Baby Boomers and Millennials want walkable, bikeable neighborhoods.”

5.3 Implications for Policy and Planning

The results of the key informant interviews provide useful insights into the values associated with trails in Central Ohio, potential concerns about trails, and new benefits to be obtained through further development of the trail system. These future benefits include increased connectivity, retention of talent, and enhanced livability. The results complement and reinforce insights gained through analyses of the intercept and online perspectives, including the importance of trails providing opportunities for recreation, fitness, transportation, health, economic development, and livability.

These insights can be used to develop strategies for building support for expansion of the trail network. Policy-makers and planners should address each of the five themes suggested by the interviews. Possible strategies include:

- Trail planners and advocates should focus on the many different benefits provided by trails in educational and outreach materials to support trail development.
- Trail planners and managers should continue ongoing efforts to increase connectivity, especially through creation of east-west connections that link to north-south oriented trails and connections across smaller, suburban communities.
- Planners and others need to continue to address unfounded perceptions about personal security and property crime and to address concerns associated with traffic safety including congestion and interactions between cyclists and other users.
- Planners should consider how best to engage economic and workforce development specialists, including human resources professionals from leading health, technology, and other industries, in efforts to target millennials in trail planning initiatives.
- The vision for Central Ohio Greenways should be multi-faceted, stressing linkages across the recreation, transportation, health, and economic sectors; and strategies for funding trail development should engage these sectors.
- Long-term planning for trails can be enhanced by concerted efforts to engage constituencies in addition to the recreation, bicycling, and walking communities. These stakeholders include business leaders, health leaders, transportation officials, and economic development specialists.

6. Property Sales near Trails: A Statistical Summary

Trails add value to neighborhoods because they provide new opportunities for recreation and exercise and improve access to parks, places of employment, and shopping. Some studies have shown that the presence of trails also may be correlated with property values but others have not found this to be the case. As observed by some key informants, property owners sometimes fear that trails near their homes will increase crime and reduce property values. MORPC and COG asked the research team to address questions about the effects of trails on property values in Central Ohio. The purpose of the property value analysis was to determine if proximity or accessibility to trails is correlated, either positively or negatively, with residential property values in Franklin and Delaware Counties.

6.1 The Property Value Approach

Similar to other studies of the effects of trails on property values, the research team used the property value approach to assess the relationship between trails and residential housing prices in Franklin and Delaware Counties. In the research literature, this approach is known as hedonic price analysis. This approach involves construction of multivariate statistical models in which the dependent variable is sales price of the residential home and the independent variables that affect price are the characteristics of the property such as the number of bedroom and neighborhood characteristics, including access to trails. From a methodological perspective, this study improves on others in the literature in that it incorporates measures of trail use, specifically counts from MORPC's trail monitoring program. These trail counts are used as measures of "trail attractiveness" – the hypothesis is that the trail segments that are more heavily used are more attractive and therefore more likely to be associated positively with property values.

To complete the analyses, the research team obtained detailed property tax records that included sales data from Franklin and Delaware Counties for the years 2011 through 2013. After the data were cleaned to eliminate obvious data entry errors and missing data, the samples of property sales included 36,969 observations in Franklin County and 9,198 observations in Delaware County. A total of 10 trails, with 99 trail segments, were included in the analysis (Figure 13). Proximity to a trail access point was measured using network distance. In Franklin County, 1,294 sales (3.5%) were within ¼ mile of a trail and 2,884 sales (7.8%) were within ½ mile of a trail. In Delaware County, 304 sales (3.3%) were within ¼ mile of a trail and 791 sales (8.6%) were within ½ mile of a trail.

6.2 Property Value Analysis: Results

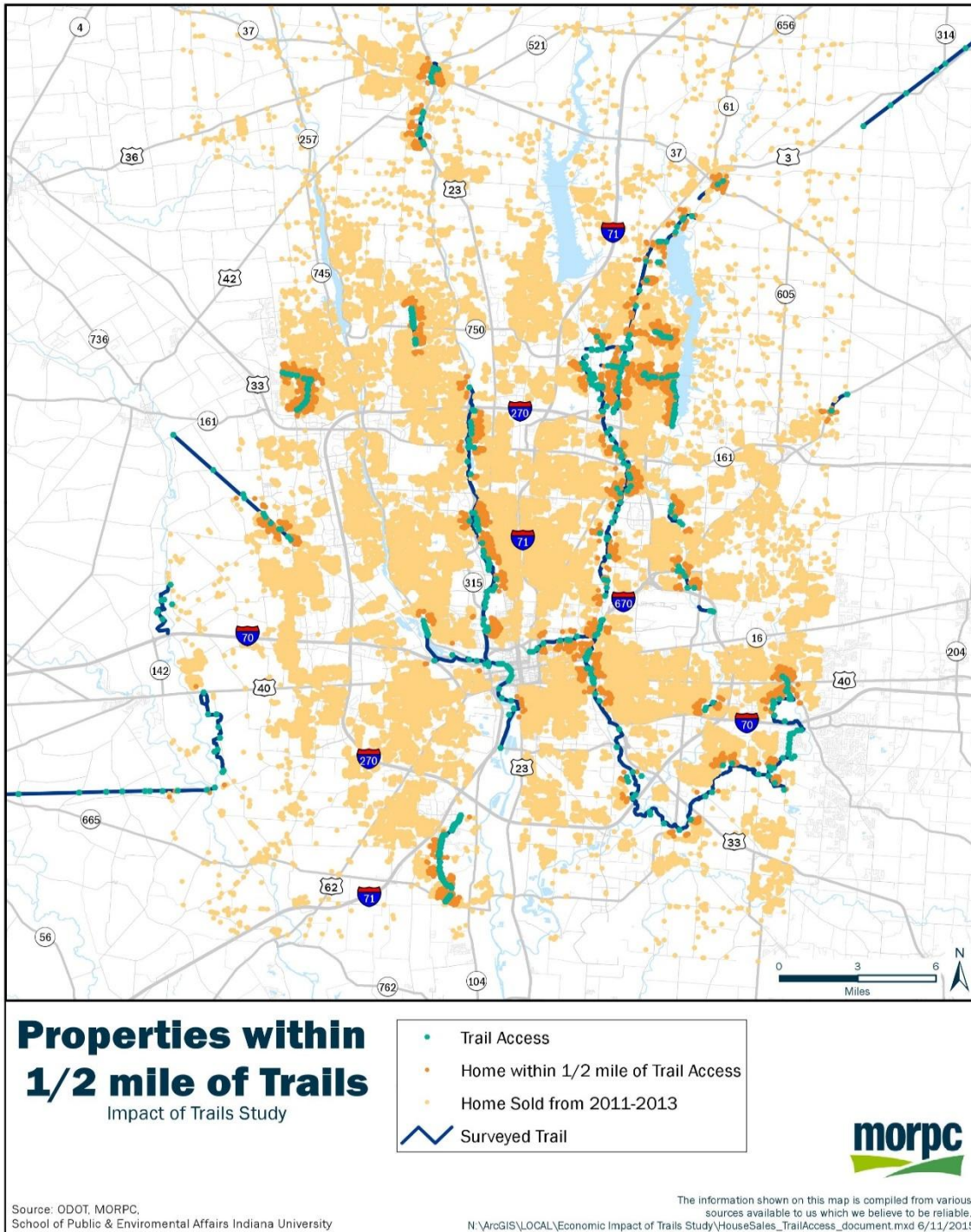
The average price of homes sold in Delaware County (\$277,744) was substantially higher than the average sales price in Franklin County (\$164,856). On average, the homes sold in Delaware County were located on larger parcels, had more square feet of livable space, more rooms, more bathrooms, and had been built more recently.

The research team estimated statistical models separately for each county. Like similar models used in analyses of residential property sales elsewhere, the models, were able to explain much of the variation in sales prices of residential properties. In Franklin County, the variables in the model explained approximately 81% of the variation in sales price, while in Delaware County, the variables explained about 74% of variation in sales price. As expected based on observations of real estate markets, the models for both counties identified statistically significant positive relationships between housing prices and size of parcel, square feet living area, number of bathrooms, number of half bathrooms, number of total rooms, fireplace, condition, and school district



quality. The models also measured a statistically significant negative relationship between age of the home and homes without central air conditioning.

Figure 13. Residential property sales in Franklin and Delaware Counties within 1/2 mile of trails



To test the correlation between sales price and proximity to a trail (both generally and by access point), the team estimated several different models using different distances to the trail, including $\frac{1}{4}$ mile, $\frac{1}{2}$ mile, and between $\frac{1}{4}$ and $\frac{1}{2}$ mile. The research team also differentiated trail segments by level of use and re-estimated the models to test whether access to highly used trail segments (as opposed to moderately or less frequently used trail segments) was correlated with sales prices. The trail proximity and access variables in the models were not significant and did not change the results of the overall model, indicating that proximity to a trail in Franklin and Delaware County does not significantly affect property sales prices, either positively or negatively.

6.3 Implications for Planning and Policy Analysis

In sum, the research team obtained and analyzed nearly 37,000 residential property sales in Franklin County and more than 9,000 residential property sales in Delaware County to determine whether property values are correlated with proximity and access to trails. The analyses used standard statistical approaches but incorporated new measures of trail use into the analyses.

No relationships between property values and proximity to trails were observed. While some studies in other cities in the United States have found positive associations, others have not. This outcome therefore is consistent with other findings in the literature.

These results have implications for agencies and planners responsible for trail development and management. As noted in Chapter 5, key informants believe it is important to address concerns about property crime and personal security on the trails. Proposals to develop trails often are met with resistance or opposition from nearby property owners who fear the trails will adversely affect their property values. Similarly, when public hearings are held for input for trail maintenance and other projects, nearby property owners sometimes voice concerns about the effects of changes on their property. These analyses show there are no adverse effects associated with 10 different trails in Franklin and Delaware Counties. This information should be shared with property owners to address their concerns.

7. The Costs of Trails: A Regional Overview

People value trails, but trails cost money to build and maintain. MORPC, COG, and the research team collaborated to collect and analyze information on the costs of trail construction and maintenance. The goal of the analysis was to determine the range of costs for trail development and maintenance in the region so decision-makers can assess past investments, have reference points for making future investments, and, more generally, make more informed decisions about management of the trail network.

7.1 Collection of Cost Data

MORPC and the research team worked with trail managers in Franklin and Delaware Counties to obtain cost data. The research team prepared an Excel© spreadsheet that was used as a template for reporting costs, and MORPC asked representatives of each agency responsible for trails to complete the form. Data collection occurred between June 2014 and January 2015. Key information collected for each trail included trail name, trail segment, length, management entity, status, configuration, completion date, segment cost, total cost, and per mile cost. The research team then summarized data reported by local agencies and reviewed draft summaries with MORPC and the COG team.

Construction cost data were not reported for the Olentangy and I-670 Trails. The principal limitation of the cost analysis is that different agencies practice different types of cost-accounting and it is very difficult to ensure that cost estimates in particular categories are the same. For example, trails are maintained by different agencies (e.g., recreation departments or public works departments) in different communities that have different systems for allocating and reporting costs of maintenance. In some cases, costs are not allocated to particular trails, so more generalized data are reported. Despite these limitations, the estimates are illustrative of the range of costs to build and maintain trails in the region.

7.2 Reported Costs for COG Trail Construction and Maintenance

Costs for trail construction and maintenance reported by local agencies are summarized in Table 8. Construction costs range by a factor of about 10 from \$128,000 per mile to more than \$1.5 million per mile and average about \$559,000 per mile. The variation reflects a variety of factors, including the complexity of the terrain and the difficulty of building. For example, in highly congested urban areas where property values are higher and there are more complications associated with utilities and traffic controls, costs tend to be higher. Conversely, costs of trail development in greenfields tend to be lower because there are fewer complications associated with installation. Maintenance costs vary from approximately \$1,000 per mile to more than \$10,000 per mile, with an average cost of maintenance per mile of \$6,300. This variation reflects localized factors such as age and condition of trail and other structural features of the trails themselves, including the presence of bridges, rail crossings, and other infrastructure and road features. As noted previously, variations in local agency systems for cost accounting and reporting also affect variations in reported expenditures on maintenance.

7.3 Implications for Policy and Planning

The cost data collected from trail agencies in the region represent the most comprehensive set of data for construction and maintenance costs assembled for Central Ohio. Comparisons with recent data reported nationally indicate the per-mile construction costs are well within national averages for similar trail facilities (Bushell et al. 2013). Comparisons of maintenance costs with



national averages are problematic for the same reasons as making comparisons across local agencies within the region is difficult: agencies' budgets account for and report maintenance expenses in different ways. However, a review of resources indicates that reported costs for maintenance of trails in the region also are within ranges reported nationally. In sum, the costs to build and maintain trails in Central Ohio are comparable to and competitive with costs incurred elsewhere in the United States.

These findings are useful because they provide a foundation for assessing whether the values provided by trails in Central Ohio justify the investment. Comparison of costs with benefits is complicated because many of the most important values provided by trails – increasing opportunities for recreation, supporting healthy lifestyles, enhancing livability, and retaining talent – cannot be quantified in dollar and cents. Despite these challenges, the cost data will enable policy-makers and planners to construct scenarios, evaluate alternatives, and make better decisions about future trail investments.

Table 8. Reported construction and maintenance costs for COG Trails

Trail	Length (miles)*	Total Construction Cost	Construction Cost / Mile	Total Annual Maintenance Cost	Annual Maintenance Cost / Mile
Alum Creek Trail	21.4	\$ 2,738,000	\$ 128,106	\$ 137,187	\$ 6,419
Big Walnut Trail	3.5	\$ 2,431,000	\$ 704,638	\$ 3,458	\$ 1,002
Blacklick Trail	16.0	\$ 9,861,963	\$ 615,718	\$ 169,658	\$ 10,592
Camp Chase Trail	7.0	\$ 10,757,919	\$ 1,536,846	\$ 29,493	\$ 4,213
Darby Creek Trail	8.6	\$ 1,930,000	\$ 224,158	\$ 48,975	\$ 5,688
Heritage Trail	6.2	\$ 1,690,000	\$ 270,833	\$ 54,288	\$ 8,700
I-670 Trail*	0.8	-	-	\$ 2,881	\$ 3,795
Olentangy Trail*	10.4	-	-	\$ 39,301	\$ 3,795
Scioto Trail**	8.9 (1.65**)	\$630,000**	\$381,554**	\$ 33,684	\$ 3,796
All Trails***	82.7 (53.7***)	\$ 30,039,000	\$ 559,000	\$ 519,000	\$ 6,300

*Construction costs not reported for Olentangy and I-670 Trails.
 **Construction costs reported for only 1.65 miles of Scioto Trail.
 ***Construction costs reported for 52.3 of 82.7 miles of trail.

8. Conclusions

MORPC and Central Ohio communities have a history of promoting and investing in a balanced transportation system that includes multiuse trails and other infrastructure to support bicycling, walking, and transit use. The COG trail network, which includes more than 100 miles of mostly interconnected off-street trails, serves as the backbone of the region's non-motorized transportation system. Past studies by MORPC and its partners have shown that thousands of people use the trails. To learn more about how to enhance these values and the economic and other benefits trails provide to the region, MORPC and its partners commissioned this study, "The Impacts of Trails in Central Ohio." The research included monitoring of trail traffic, surveys of trail users, interviews of regional leaders, property value analyses, and review of trail construction and maintenance costs within two counties represented by COG – Delaware and Franklin. The study is the most comprehensive assessment of trails ever completed for Central Ohio and, in the area of traffic monitoring, places MORPC and its partners in the forefront of efforts nationally to measure and document regional bicycle and pedestrian traffic flows on trails. The findings have implications for elected officials, public managers, business leaders, developers, health care providers, nonprofit and philanthropic funders, and, of course, the residents of Central Ohio who use and value trails.

The key finding of this study is that the COG trail network is a valuable regional asset that provides a wide range of benefits to the Central Ohio residents who use the trails for recreation, fitness and health, commuting, and other purposes. The COG trail network provides people with nearby places to bike and walk safely, to engage in the exercise essential for a healthy life, to travel to work or to dine and shop, and to relax with family and friends and experience nature. The diversity of values trails provide to the residents of Central Ohio mirrors the diversity of the neighborhoods they traverse.

People in Central Ohio show the value they place on trails by "voting with their feet." Automated monitoring of trail traffic with infrared monitors shows that thousands of people annually travel nearly 12 million miles on the COG trail network. To put this distance in perspective, it is roughly the equivalent of 500 times around the earth.

Other important findings include:

- Many of the trail users use trails three or more times per week, the typical visit is between one and two hours long, and the users visit multiple trails in the network. Most of the users are middle-aged; nearly three-fourths have college or graduate degrees, and more than half report household incomes above \$75,000 per year. Nearly half visit with friends, and a significant proportion visit with children, indicating trails serve social purposes and meet family needs.
- About one-fifth of users say they spend modest amounts of money, typically between \$15 and \$20 for refreshments and dining, on a trail visit. Across all trail users, this result indicates an average expenditure by individual trail users of about \$3 per visit. Avid bicyclists report substantial expenditures on bicycles and related equipment and accessories.
- Trail enthusiasts, especially bicyclists, rated trail surface, traffic safety, free-flowing traffic, and intersection safety as the most important physical characteristics, and they reported satisfaction with management of each of them. Trail users were most satisfied with the quality of scenery and views, personal security, the absence of litter and graffiti, and available parking.
- Analyses of written comments by participants in the online survey show that users believe the trails are well-maintained facilities that provide safe access and connectivity to destinations throughout Central Ohio. When asked about needed improvements, participants

emphasized greater connectivity, particularly east-west routes that provide better access to destinations like parks and links to roads for commuting to employment.

- Regional leaders echoed common themes: trails provide value to their communities, increase connectivity and access to destinations, produce positive economic impacts, help attract and retain talent, and can contribute to the economic vitality and health of the region in the future. They indicated that concerns about personal security and traffic safety need to be addressed to maximize the benefits of trails, but also expressed the view that these concerns tend to be based on anecdote rather than fact.
- Analyses of more than 45,000 residential property sales near trails show there are no adverse effects on prices associated with proximity to trails.
- The costs of trail construction and maintenance in Central Ohio are consistent with costs reported nationally.
- Many of the values provided by the COG trail network are indirect and cannot be easily quantified. Examples include reduced health care expenditures because of better fitness and peace of mind that comes from access to and use of high quality and well maintained facilities for recreation.

Overall, these results provide the most complete assessment of trail use and the most detailed profile of trail users compiled for Central Ohio. They provide a firm foundation for planning to meet the growing needs of Central Ohio residents. Elected officials have new measures of the volume of trail use, the preferences of trail users, and the costs of trails to consider when deliberating future investments. Public managers have new information about user satisfaction with trail management to guide facility maintenance and investments in treatments to improve traffic safety. Regional business leaders and developers have new information, including data on the demographics of trail users and their expenditures, to inform business decisions. Health care providers have new evidence that trails are locations of choice for the Central Ohio population to exercise and improve health. Nonprofit and philanthropic funders have new data to gauge the potential results of investments in new trail facilities across the region. Property owners and realtors have solid evidence that home values are not affected adversely by trails. Finally, and perhaps most importantly, the residents of Central Ohio have been engaged directly in shaping the future of the trails they value and use.

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