

MEET AT THE MOUNDS

An Economic, Health, and
Environmental Benefits Analysis



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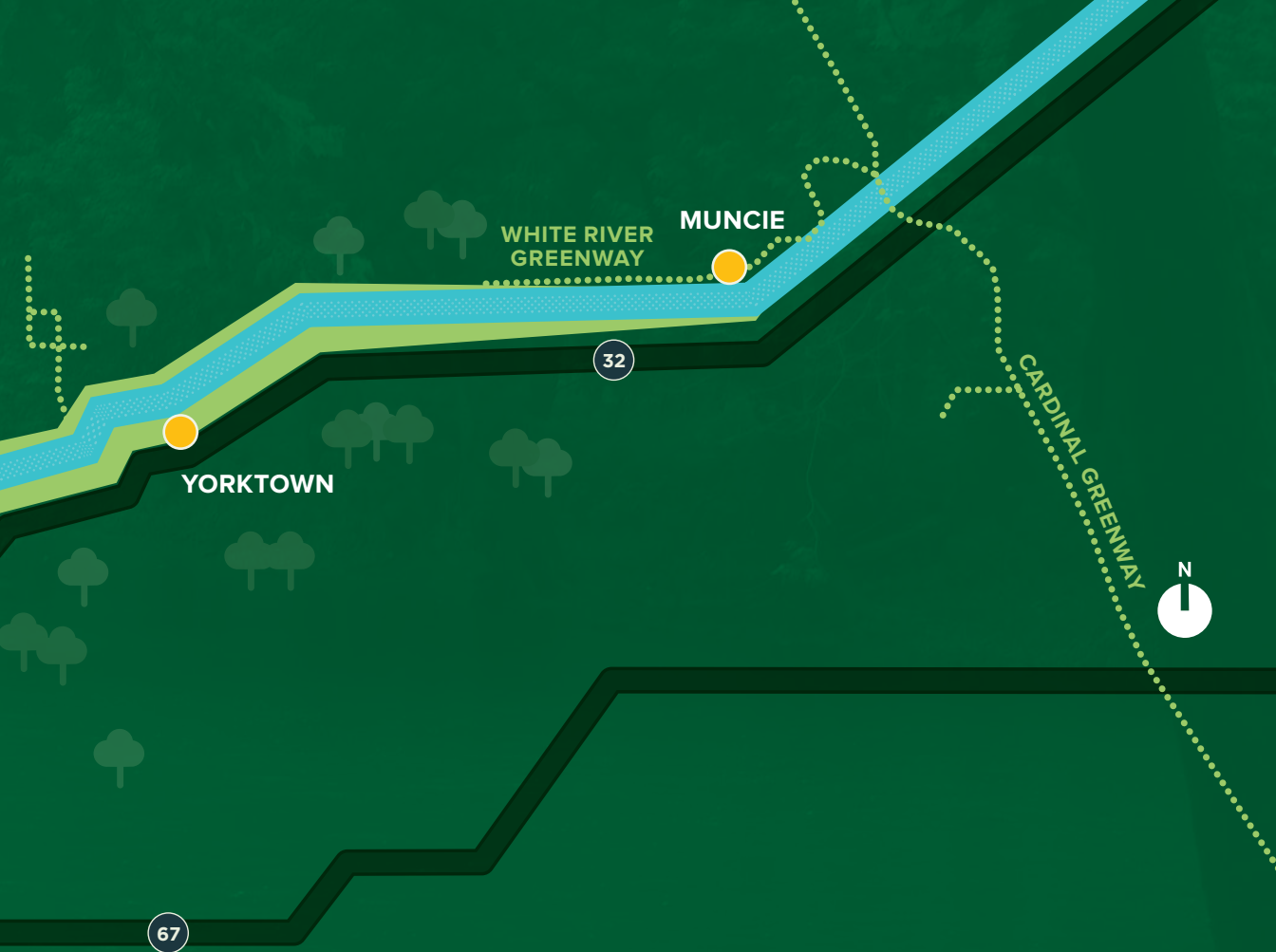
30 SOURCES

BENEFITS

PROPOSED GREENWAY CORRIDOR

with trail route to be determined





Constructing the **MOUNDS GREENWAY**

will connect the East Central Indiana communities of Blackford County, Delaware County, Henry County, Jay County, and Madison County, providing residents and visitors a fun, healthy way to experience the culture and natural beauty of the region.

Envisioned as a quality of life amenity and planned as a tool for land and river conservation, the greenway will create new opportunities for outdoor recreation and sustainable economic growth. From Muncie to Anderson, the greenway will extend over 17 miles connecting city centers, schools, and universities through

a system of parks along the White River, serving as the “missing link” in a 149-mile regional trail network across East Central Indiana.

The full build-out of the Mounds Greenway will impact a variety of health, environmental, economic, and transportation factors that directly affect the lives of East Central Indiana residents and visitors. Quantifying these factors and understanding the magnitude of their impact on the region enables a more informed discussion on whether and how best to invest in the greenway and trail network.

What will it
CONNECT? →





Anderson
Chesterfield
Daleville
Yorktown
Muncie



Anderson University
Ball State University
Ivy Tech Community College
Purdue Polytechnic Institute



White River Greenway (Muncie)
Cardinal Greenway
Rangeline Nature Preserve
Mountain Bike Trail
White River Trail (Anderson)



Rangeline Nature Preserve
Mounds State Park
Walbridge Acres Park
David Shellabarger Park
Morrow's Meadow

PROPOSED GREENWAY CORRIDOR

with trail route to be determined



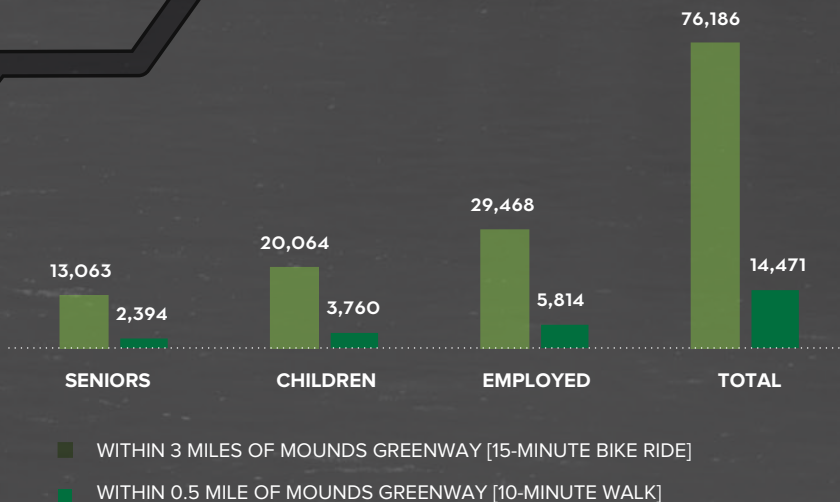
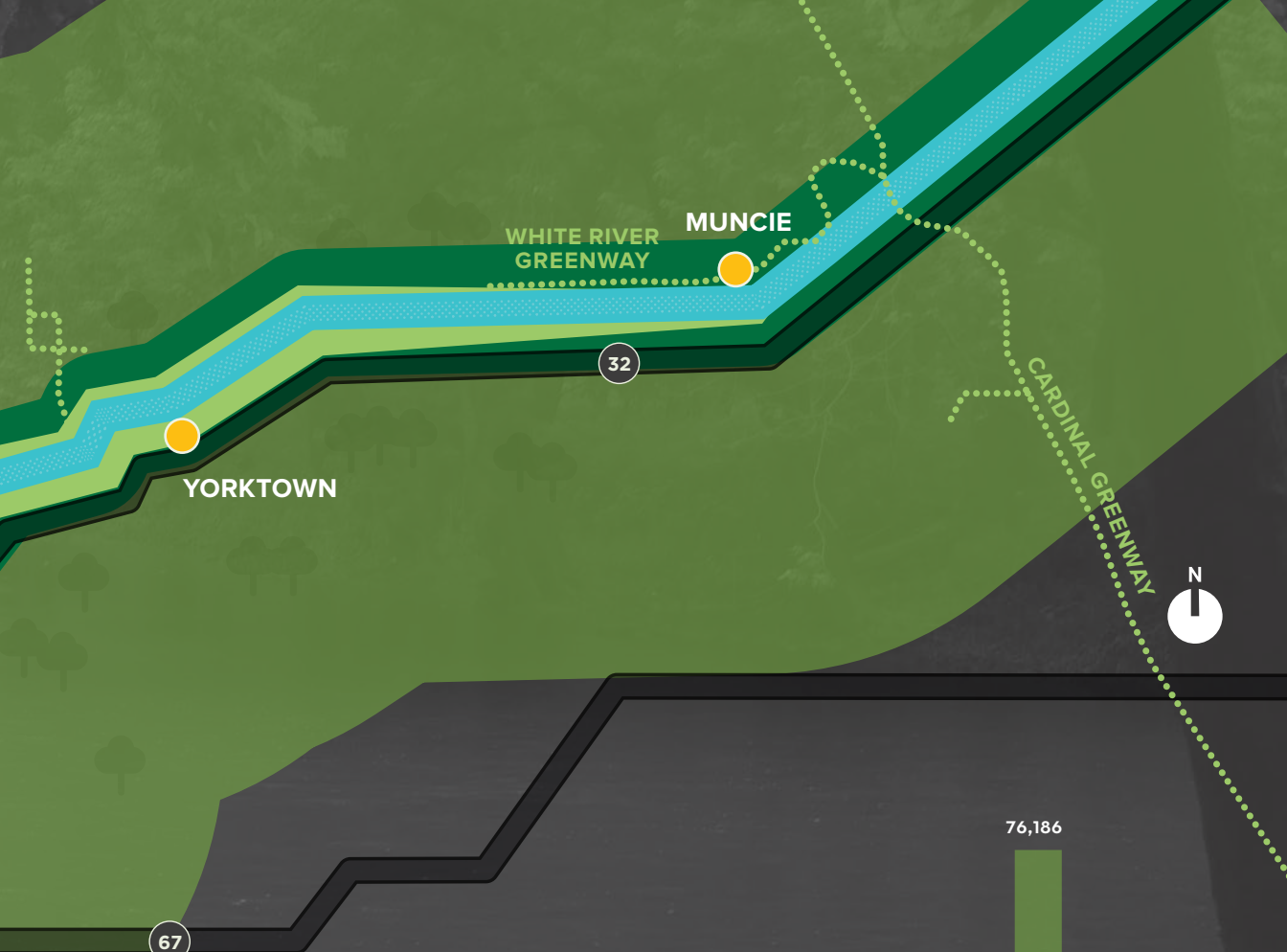
ANDERSON

WHITE RIVER TRAIL

CHESTERFIELD

DALEVILLE

Mounds State Park



Who lives near the Greenway

While the construction of the Mounds Greenway will benefit all residents of and visitors to the region by closing a large gap between the popular White River Trail and the Cardinal Greenway, a review of existing trails within Indiana found that the most frequent users generally live in close proximity of the trail.¹ Because of this, the bicycling study area of this analysis was limited to those living within

3 miles of the greenway (about a 15 minute bike ride)² and the walking study area was limited to those within 0.5 mile (about a 10 minute walk).³ However, it is important to note that the greenway will serve as an amenity for the entire region, and that the creation of a regional network, while difficult to model, greatly expands access to trail and park facilities for all East Central Indiana residents.



Method

The benefits analysis uses a standard methodology for calculating health, environmental, economic, and transportation-related benefits. All projections are based on the most recent five-year estimates from the American Community Survey (ACS), which are then extrapolated through the use of over 50 multipliers derived from various studies and peer-reviewed journal articles around the U.S. and quantified in terms of monetary value where appropriate.

Limitations

The primary purpose of the analysis is to enable a more informed discussion on whether and how best to invest in a greenway network in East Central Indiana. Even with extensive primary and

secondary research incorporated into the benefits analysis, it is impossible to accurately predict the exact impacts of various factors. Accordingly, all estimated benefit values are rounded and should be considered order of magnitude estimates, rather than exact amounts. Additionally, many of these studies on which the multipliers are based focus on urban areas rather than suburban or rural areas like East Central Indiana. In some cases, this may result in the overestimation of benefits, and efforts were made to select the most conservative estimates where appropriate. Finally, it is important to note the possibility of a future downstream extension of the greenway to Indianapolis. Such an extension, if implemented, would represent a significant expansion in the benefits described in this analysis.

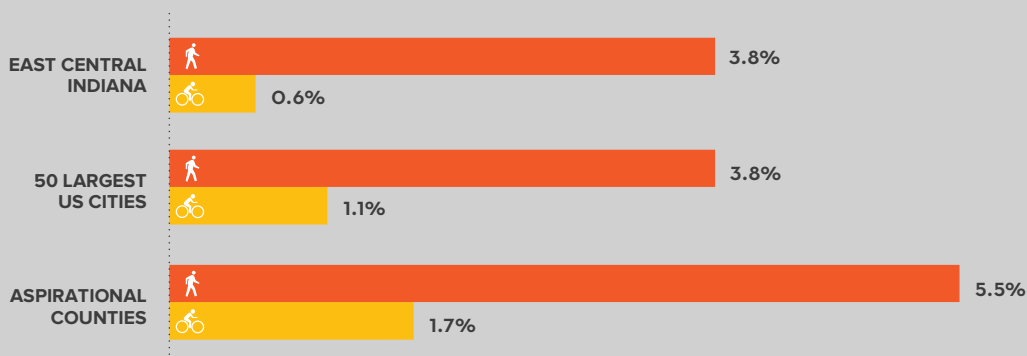
How East Central Indiana Compares

How will a fully-constructed trail network change the way residents and visitors experience East Central Indiana? To better understand the shift in travel behavior, we looked at transportation patterns in counties similar to East Central Indiana but with more advanced bicycle and pedestrian networks. These “aspirational counties” were selected based on proximity to the study area as well as similarities in the design of their roadway networks, climates, terrain, population size, demographics, and proximity to universities.

Based on these criteria, Lee County (AL), Champaign County (IL), St. Joseph County (IN), Ingham County (MI), Washtenaw County (MI), Winona County (MN), and Portage County (WI) were selected as aspirational counties. All of the selected aspirational counties were home to cities that received at least the League of American Bicyclist’s bronze level Bicycle Friendly Community® award

designation.⁴ In addition, Ingham County and Washtenaw County received an honorable mention and gold level Walk Friendly Community award designation, respectively. Only recently (May 2016) has an East Central Indiana community received a bicycle-friendly award, with Muncie receiving Bronze status from the American League of Bicyclists.⁵

The designation of a locale as a Bicycle or Walk Friendly Community represents a significant investment in improving the bicycling and walking environment. Because of this, residents in the seven aspirational counties were more likely to bicycle or walk compared to residents in East Central Indiana. Currently, only 0.6 percent of the East Central Indiana population bike to work compared to an average of 1.7 percent in the aspirational counties, and 3.8 percent of people walk to work in East Central Indiana compared to an average of 5.5 percent among the aspirational counties.⁶





HEALTH

BEFORE

The construction of a well-designed, connected greenway across East Central Indiana will provide residents with increased access to recreational facilities and encourage greater levels of physical activity.

The health and wellness of East Central Indiana residents is tightly linked to their access to places to recreate. According to the U.S. Department of Health and Human Services, only 18 percent of East Central Indiana residents have access to a park, playground, garden, fitness center, trail, or other place for physical activity,⁷ which has contributed to an environment in which 30 percent of adults had not exercised within the past month.⁸

Insufficient access to recreational facilities and lack of physical activity has led to high rates of obesity, diabetes, and hypertension within the region and has put a strain on residents' healthcare costs. Roughly one-third of the region's adults are obese and another one-third are considered overweight by the Centers for Disease Control and Prevention, helping place Indiana in the bottom ten states in the country.⁹ The rate of diabetes has doubled in Indiana over the last 20 years,



AFTER

with 9 percent of East Central Indiana adults diagnosed with the disease and approximately 39 people dying from diabetes-related complications in the region each year.¹⁰ Additionally, 1.25 million Hoosier adults are at risk for heart attack, stroke, and aneurysm because of high rates of hypertension (high blood pressure).

These high rates of obesity, diabetes, and hypertension, in addition to mental health issues,¹¹ have contributed to increased healthcare costs for East Central Indiana residents. According to the Dartmouth Atlas of Health Care, the region spends approximately \$9,800 per person in healthcare-related expenses.¹² Because of the high cost of healthcare, 17 percent of East Central Indiana residents report avoiding visits to the doctor, allowing small health issues to snowball into major health issues¹³ (there were an estimated 20,000 preventable hospital stays within the region in 2013).¹⁴

Fortunately, some of these health issues are avoidable. The construction of a well-designed, connected greenway across East Central Indiana will provide residents with increased access to recreational facilities and encourage greater levels of physical activity. In a survey of trail users in Indiana, 70 percent of people living next to a trail reported exercising more because of their proximity to the trail and 92 percent of people said that the trail made them like their city more.¹⁵ A growing body of literature links parks and trails to increased physical activity, lowered risk of chronic diseases, greater weight management,¹⁶ increased mental fitness,¹⁷ the reversal of Type II diabetes,¹⁸ and decreased healthcare costs.¹⁹ It is estimated that construction of the Mounds Greenway would result in over 1.8 million more miles walked and biked, contribute to over 200,000 additional hours of physical activity, and save East Central Indiana residents over \$300,000 in healthcare costs per year.

HEALTH

“
I urge you to please notice when you are happy, and exclaim or murmur or think at some point, ‘If this isn’t nice, I don’t know what is.’”

– KURT VONNEGUT,
INDIANAPOLIS NATIVE
AND AUTHOR ²⁵

WHY IT MATTERS



30%

OF EAST CENTRAL INDIANA RESIDENTS **DON'T EXERCISE REGULARLY** ²⁰



17%

OF EAST CENTRAL INDIANA RESIDENTS ARE **UNINSURED** ²¹

INDIANA HAS THE



HIGHEST OBESITY RATE IN THE COUNTRY ²²



82%

OF EAST CENTRAL INDIANA RESIDENTS **DON'T HAVE ACCESS TO RECREATION FACILITIES** ²³

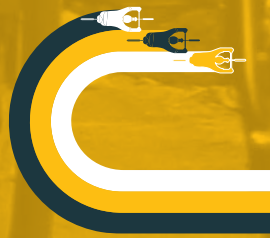


DIABETES HAS **DOUBLED** AMONG HOOSIERS OVER THE LAST 20 YEARS ²⁴

WHEN IT'S BUILT

1,721,000

MORE MILES BIKED PER YEAR



That's the equivalent of **688,000 laps** around the Indy Motor Speedway

151,000



MORE MILES WALKED PER YEAR



That's the equivalent of **1,000 trips** across the state

\$309,000

IN HEALTHCARE COST SAVINGS PER YEAR



That's the equivalent of **15 years of Muncie Mini Marathon entrance fees**

223,000

ADDITIONAL HOURS OF EXERCISE PER YEAR



That's the equivalent of **29,000 Indiana Pacers games**



ENVIRONMENT

BEFORE

Climate

The creation of a 2,300-acre linear park along the White River will help reduce negative health outcomes associated with air pollution and our changing climate.

Air pollution can intensify existing chronic health conditions and can contribute to severe health conditions in children and pregnant women.²⁶ Currently, 85 percent of employed residents within the study area drive alone to work, contributing to Indiana being one of six states violating the federal government's annual fine particulate matter standard and one of 27 states violating the federal government's eight-hour ozone standard.²⁷ Fine particulate matter and ozone have been implicated as factors that contribute to asthma.²⁸ Indiana has the 11th highest adult prevalence of asthma in the country,²⁹ and one-tenth of children in the state have been diagnosed with asthma.³⁰

A 25 percent reduction in particulate matter alone would prevent 55 fatalities among East Central Indiana residents, according to the Centers for Disease Control and Prevention.³¹

Greenhouse gas emissions resulting from single-occupant motor vehicle trips also contribute to hotter and more frequent heat waves.³² If Indiana's emissions rate continues to grow, the Centers for Disease Control and Prevention estimate that East Central Indiana residents will have to endure 27 extreme heat days by 2050.³³ Construction of the Mounds Greenway would help divert over 5 million pounds of greenhouse gases and criteria pollutants per year, helping to curb air pollution and reduce the most extreme impacts of climate change, such as sustained heat waves.



Conservation

Currently, there are limited standards in place to protect the watershed and natural habitats surrounding the West Fork of the White River.³⁴ Among the river valley's treasured resources are priceless prehistoric sites such as the Adena and Hopewell earthworks in Mounds State Park. The Great Mound, the largest and best preserved of the ten mounds identified within the park boundaries, was believed to have been built around 250 BC and served as a ceremonial site and burial ground. Orientation of the Great Mound and its smaller surrounding mounds mark the winter and summer solstice, and during the spring and fall equinox, the sun rises directly in line with one of the smaller mounds' gateway. Many of the historic mounds found in East Central Indiana were destroyed as land was cleared for agriculture during the 19th and 20th centuries, and protection of the earth structures within Mounds State Park is attributed to the original property owners' refusal to plow the mounds and their defense against looters.³⁵

Conservation of the riparian corridor along the West Fork of the White River for the Mounds Greenway will help to prevent future development along the floodplain, ensure that nearly 2,000 acres of high-quality bottomland hardwood forest and wetlands remain in a natural state, protect vital fish and wildlife habitats,³⁶ and keep the White River free-flowing. The Mounds Greenway will also help protect the integrity of Mounds State Park which preserves the Adena and Hopewell Mounds for future generations.

FEMA estimates that over 5,000 homes in East Central Indiana are vulnerable to floods,³⁷ and the conservation of floodplains along the White River will help prevent the number of vulnerable homes from increasing under future housing development pressure. This floodplain preservation is estimated to save the region over \$8 million per year in storm-water and flood reduction costs.

ENVIRONMENT



In every walk with nature one receives far more than he seeks. ”

– JOHN MUIR, ONE-TIME INDIANAPOLIS RESIDENT, FAMED NATURALIST, AUTHOR, AND SIERRA CLUB FOUNDER ⁴¹

WHY IT MATTERS



14%

OF HOOSIERS HAVE BEEN **DIAGNOSED WITH ASTHMA** ³⁸



THERE WILL BE

27 **EXTREME HEAT DAYS**

IN EAST CENTRAL INDIANA PER YEAR BY 2050 ³⁹



5,000

EAST CENTRAL INDIANA HOMES ARE **VULNERABLE TO FLOODS** ⁴⁰

WHEN IT'S BUILT



\$8,349,000

IN STORMWATER AND FLOOD
REDUCTION COST SAVINGS PER YEAR

5,135,000

IN DIVERTED LBS
OF EMISSIONS
PER YEAR



PRESERVE

PRICELESS PRE-HISTORIC
SITES, OPEN SPACES, AND
WILDLIFE HABITATS FOR
FUTURE GENERATIONS

TRANSPORT

Linking the existing White River Trail in Anderson and the Cardinal Greenway in Muncie will help create a transportation corridor that will allow residents the opportunity to walk and bicycle to work or school. While no money changes hands, real savings can be estimated from the reduced costs associated with congestion, vehicle crashes, road maintenance, and household vehicle operations.

Transportation spending consumes a large portion of East Central Indiana household incomes and exceeds average regional spending on housing. On average, families spend 29 percent of their income on transportation or over \$13,000 per year.⁴² For the employed population living within three miles of the greenway,⁴³ 7 percent do not have access to a car, and overall there is limited to no public transportation available for East Central Indiana residents.⁴⁴ The potential exists for encouraging bicycle to work trips; 17 percent of people living near the trail live within bicycling distance of work, but currently less than 1 percent of workers chose to bike.⁴⁵

The construction of the Mounds Greenway would help encourage residents to replace single-occupant motor vehicle trips with bicycle or walking trips. Closing the gap between Anderson's White River Trail and Muncie's Cardinal Greenway could lead to an estimated 1.5 million mile reduction in vehicle-miles traveled per year, which translates into \$108,000 in traffic congestion cost savings, \$229,000 in roadway maintenance cost savings, \$764,000 in collision cost savings, and \$869,000 in household vehicle cost savings.

The construction of the Mounds Greenway would help encourage residents to replace single-occupant motor vehicle trips with bicycle or walking trips.

BEFORE



AFTER



TRANSPORT

“

I rejoice every time I see a woman ride by on a [bike]. It gives her a feeling of self-reliance and independence the moment she takes her seat; and away she goes, the picture of untrammelled womanhood. ”

– SUSAN B. ANTHONY,
SOCIAL REFORMER
AND WOMEN'S
SUFFRAGE LEADER ⁴⁶

WHY IT MATTERS



17% OF
PEOPLE NEAR
THE TRAIL LIVE
WITHIN BIKING
DISTANCE OF
WORK BUT

< 1%
BIKE TO WORK ⁴⁷



7%
OF PEOPLE NEAR THE
TRAIL **DON'T HAVE**
ACCESS TO A CAR ⁴⁸

EAST CENTRAL INDIANA FAMILIES SPEND



29% OF THEIR INCOME
ON TRANSPORTATION
(\$13,000/YEAR) ⁴⁹

WHEN IT'S BUILT



1,526,000 FEWER VEHICLE-MILES TRAVELED PER YEAR



That's the equivalent of 5 oil tank trucks



\$229,000

IN ROAD MAINTENANCE COST SAVINGS PER YEAR



\$869,000

HOUSEHOLD VEHICLE COST SAVINGS PER YEAR



\$764,000 IN COLLISION COST SAVINGS PER YEAR

ECONOMIC

East Central Indiana faces an aging and declining population, which could significantly impact the workforce in coming years as well as require services to support those who choose to age in place. The region's population has been in decline from its peak of just over 390,000 people in 1980 to under 360,000 people today. The median age of residents in the region has increased at a faster rate than the state as a whole, with the number of senior citizens growing by 11 percent from 2000 to 2013 compared to 7 percent across Indiana. The growth in older residents is mirrored by a decline in school-age and young adult populations. The number of residents under 18 decreased by 9 percent between 2000 and 2013, and despite the large number of college-aged residents attending the region's universities, East Central Indiana has had difficulty in retaining young adults. Residents between the ages of 25 and 44 comprise only 23 percent of the population compared to 26 and 27 percent for the state and country, respectively.⁵⁰

For the residents that remained in the region between 2000 and 2013, per capita income grew at a slower rate than the state as a whole (14 percent compared to 21 percent), and the percent of working

families living below the poverty line amounted to 10 percent of the population compared to 7 percent across the state. Additionally, the region lags behind the state by roughly 10 percent in the number of new businesses as a percent of all businesses.

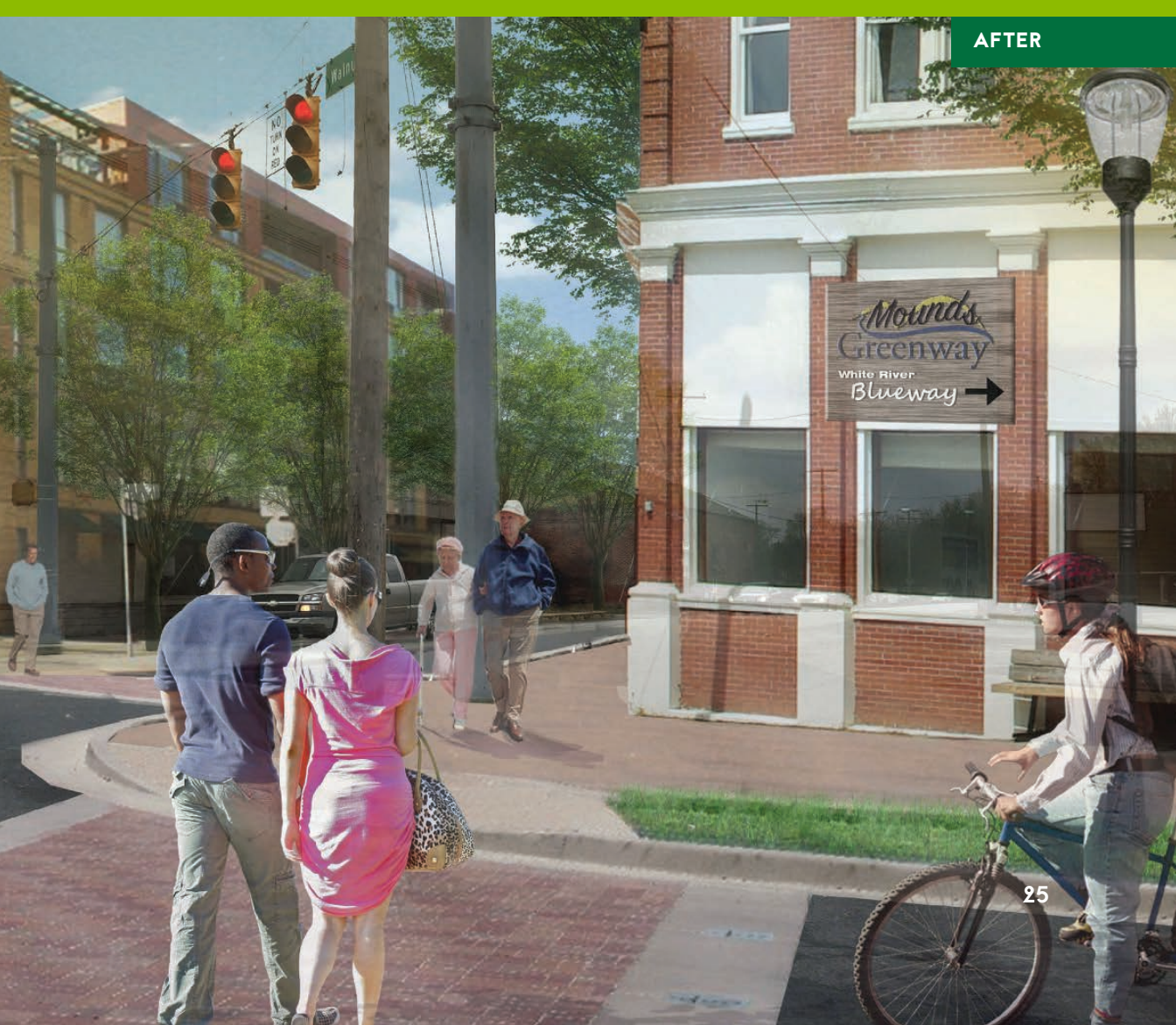
Construction of the Mounds Greenway would provide a regional amenity that could attract and retain young adults, while providing older residents with limited transportation options greater access to stores, community centers, and recreational opportunities. When completed, the greenway could provide \$3,000,000 in additional tourism-related spending per year, 23 permanent and 98 temporary jobs, and an over \$32 million one-time increase in property values.

Construction of the Mounds Greenway would provide a regional amenity that could attract and retain young adults, while providing older residents with limited transportation options greater access to stores, community centers, and recreational opportunities

BEFORE



AFTER



ECONOMIC

WHY IT MATTERS



EAST CENTRAL INDIANA'S POPULATION HAS SHRUNK BY

7% SINCE 1980 ⁵²

“

Because Indiana's regional cities are vital to our state's economic development we need public and private investment to improve quality of life. That's the Indiana way to a growing future. ”

— GOVERNOR MIKE PENCE ⁵¹



10%

OF EAST CENTRAL INDIANA RESIDENTS LIVE IN POVERTY ⁵⁴

ECONOMIC GROWTH IN EAST CENTRAL INDIANA IS



33%

SLOWER

THAN THE STATE AS A WHOLE ⁵⁵



OUTDOOR RECREATION EMPLOYS OVER

100,000

HOOSIERS ⁵³

WHEN IT'S BUILT



62,000

NEW TOURISTS
PER YEAR



\$3,000,000

IN ADDITIONAL TOURISM-RELATED
SPENDING PER YEAR



121

DIRECT AND INDIRECT JOBS



\$32,791,000

ONE-TIME INCREASE IN
PROPERTY VALUES

When the Mounds Greenway is built,
**EAST CENTRAL INDIANA
WILL GAIN ...**



1,532,000

MORE BIKE TRIPS PER YEAR



563,000

MORE WALK TRIPS PER YEAR



\$309,000

**IN HEALTH BENEFITS
PER YEAR**



\$8,400,000

**IN ENVIRONMENTAL
BENEFITS PER YEAR**



\$32,791,000

**IN ONE-TIME PROPERTY VALUE
BENEFITS**



\$10,447,000

**IN ONE-TIME DIRECT AND
INDIRECT CONSTRUCTION
SPENDING**



4%

MORE PEOPLE GETTING ENOUGH EXERCISE



121

MORE TEMPORARY AND PERMANENT JOBS FROM CONSTRUCTION AND TOURISM SPENDING



\$3,000,000

IN ECONOMIC BENEFITS PER YEAR



\$1,970,000

IN TRANSPORTATION BENEFITS PER YEAR

OVER

\$13 MILLION

IN TOTAL ANNUAL BENEFITS

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ABOUT THE HOOSIER ENVIRONMENTAL COUNCIL

Founded more than thirty years ago, the Hoosier Environmental Council (HEC) is the largest statewide environmental policy organization in Indiana. HEC works to advance solutions that are good for the environment and good for the economy. Visit hecweb.org and moundsgreenway.org for more information.

ABOUT ALTA PLANNING + DESIGN

Alta is an international consulting firm with a mission to create active communities. Atla plans, designs, and implements infrastructure and programs that improve community and individual health, safety, mobility, and livability. Visit altaplanning.com for more information.