



Southwest Detroit and Conner Creek Greenway Case Study— Community and Economic Benefits of Bicycling

Michigan Department of Transportation

FINAL REPORT

Final Report

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Prepared for

Michigan Department of Transportation
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Detroit Neighborhoods Case Study – Community and Economic Benefits of Bicycling

Introduction

This report on the community and economic impacts of bicycling in two Detroit neighborhoods – Southwest Detroit and the Conner Creek Greenway Corridor¹ – is one of five case studies developed for the Michigan Department of Transportation by BBC Research & Consulting and R. Neuner Consulting (the study team). The research on these Detroit neighborhoods was conducted as part of the first phase of a study of economics and bicycling throughout Michigan. The study objectives include:

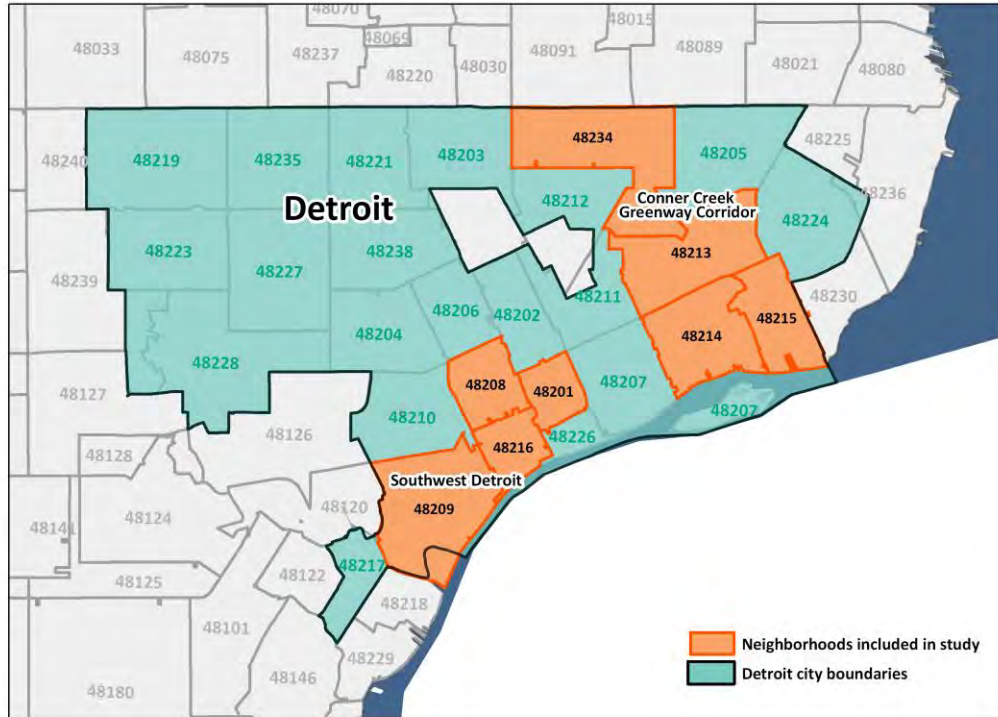
1. Estimating the community and economic benefits of bicycling in Michigan;
2. Estimating the community and economic benefits of bicycling in five case study communities throughout the state;
3. Providing in-depth qualitative information on links between bicycling and the economy according to business owners, government officials and bicycling advocates;
4. Estimating the economic benefits to Michigan from out-of-state participation in bicycling events; and
5. Estimating the economic benefits to Michigan from bicycle-related tourism.

Phase I of the project addressed the first three objectives and Phase II will address the fourth and fifth objectives. The combination of the statewide and community specific research provides an opportunity to examine the specific ways policies and infrastructure impact local businesses and residents in the context of bicycling statewide. Additionally, the diverse nature of bicycling in the five case study communities gives stakeholders throughout Michigan an understanding of the many roles bicycling can play in a local economy. As a result, the case study reports can be a useful starting place for residents in investigating the economic benefits of bicycling in communities that were not studied as a part of this research.

Figure 1 provides a map of the specific neighborhoods studied in Detroit.

¹ Southwest Detroit is defined as ZIP codes 48201, 48208, 48209 and 48216. The Conner Creek Greenway Corridor is defined as ZIP codes 48213, 48214, 48215 and 48234. This study combines the two neighborhoods into one case study community.

Figure 1.
Southwest Detroit and the Conner Creek Greenway Corridor



Source: BBC Research & Consulting, 2013..

Figure 2 shows a map of Michigan showing the Detroit neighborhoods, the other four case study communities, and the state capital, Lansing.

Figure 2.
Case study communities

Note:

* Southwest Detroit and the Conner Creek Greenway Corridor.

Source:

BBC Research & Consulting, 2013.



This report includes the following subsections, detailing findings related to bicycling in the two Detroit neighborhoods:

1. Overview;
2. Economic and community benefits of bicycling in the two Detroit neighborhoods;
3. Data sources;
4. Household spending and bicycle-related manufacturing;
5. Health benefits of bicycling;
6. Bicycle commuting and reduced absenteeism – corporate support of bicycling;
7. Events and tourism;
8. Community support and infrastructure; and
9. Background on bicycling in the two Detroit neighborhoods.

For more information on the methodology and data sources, please see Section II – Methodology and Appendix B – Data Sources from the full statewide report.

The case study is accompanied by an infographic highlighting key statistics from the research.

1- Overview

The City of Detroit is the largest city in Michigan, with more than 700,000 residents, and is the heart of a metropolitan area with more than 4.3 million people. Its prominence in the state necessitates its inclusion as a case study in some form. Conducting a case study on the city as a whole would eliminate some of the benefits associated with conducting case studies and may not have provided useful information for communities trying to understand the link between bicycling and the economy.

Given the recent increase in bicycling and bicycle-related events, the study team focused on two areas in Detroit, the Southwest Detroit neighborhood and the area around the Conner Creek Greenway, a planned nine-mile path along Conner Creek connecting Eight Mile to the Detroit River. This subset of Detroit has an emerging bicycle scene and is small enough to investigate in detail for the purposes of the case study. The population of the two neighborhoods is approximately 163,000.

The two Detroit neighborhoods are located along the Detroit River, on either side of the central business district. These areas are densely populated and socio-economically diverse. Both neighborhoods have seen substantial investment in bicycle infrastructure in recent years, and a handful of bicycle businesses have emerged.

This case study provides an estimate of the community and economic benefits of bicycling in the two Detroit neighborhoods along with key information from local residents detailing the links between the economy and bicycling. This combination of data helps the reader quantify the impacts of bicycling on the economy while providing background and context from key Detroit stakeholders on how bicycling enhances the economy of the two Detroit neighborhoods.

Given the relative lack of specific data on bicycling in Detroit, the analysis relies on information from a variety of sources including:

- Numerous stakeholder interviews with Detroit officials, bicycle advocates, business owners and residents;
- A household survey conducted with city residents; and
- A variety of secondary data sources including the United States Census Bureau’s American Community Survey, the Michigan Department of Community Health, and the United States Centers for Disease Control and Prevention.

Due to a relatively low response rate to the household survey in Detroit, a modified approach to estimating the proportion of bicyclists and household spending was used. Survey responses were robust enough to provide reliable estimations of most metrics, including bicycling frequency, barriers to bicycling and demographics.

The proportion of bicyclists (i.e. those who have ridden a bicycle in the past year) was estimated by applying the proportion of Detroit residents who, according to the 5-year American Community Survey, report usually commuting to work by bicycle (0.3%) to a weighted average of respondents to the household survey in each of the five case study communities who report having ridden a bicycle in the past year.

A similar methodology was applied in estimating bicycle-related spending per household, only a weighted average of survey-reported annual household spending was used rather than the proportion of bicyclists.

This methodology yielded sound results consistent with the results found from the survey in the other four case study communities and Michigan as a whole.

2- Economic and Health Benefits of Bicycling in the Two Detroit Neighborhoods

Below is a summary of the annual economic and health benefits associated with bicycling estimated for the two Detroit neighborhoods:

- Household spending on bicycling related items (from bicycle-specific and general retail establishments) - \$3.5 million;
- Manufacturing - \$5.2 million;
- Avoided health care costs - \$6.5 million;
- Reduced absenteeism - \$3.9 million; and
- Event and tourism spending - \$1.6 million.

These benefits total to approximately \$20.7 million annually. The remainder of the report provides more information on each of the key components of the overall economic and community benefits.

Along with the substantial benefits documented above, several key themes emerged from interviews with stakeholders in Detroit that show the connections between bicycling and economic success as viewed by local officials, the business community and bicycling advocates:²

- Bicycle infrastructure projects, particularly greenways, shared-use paths and bicycle lanes; have emerged as major tools for neighborhood stabilization and economic development across the city.
- Several major bicycling events are helping visitors from Michigan and beyond rediscover Detroit. Organizers see these events as a catalyst – event participants are making trips to the city to revisit destinations experienced on major rides.

² While qualitative information collected from various stakeholders in the two Detroit neighborhoods proved to be of great value, the views and opinions expressed by stakeholders cited in this report do not necessary represent those of MDOT.

- In a city with relatively low vehicle ownership and limited transit, bicycling can be a viable and affordable transportation option.
- A variety of challenges have forced Detroit to adopt a different philosophy to becoming bicycle-friendly, one that includes significant public-private partnerships to advance bicycle infrastructure projects.

3- Data Sources

A number of data sources were used in calculating the overall economic and community benefits and reporting on bicycling in the two Detroit neighborhoods including:

The American Community Survey (ACS) – The ACS is a survey conducted by the United States Census Bureau on an ongoing basis. It provides statistically reliable information on residents throughout the United States for a variety of topics including basic demographics, employment, transportation and payments for essential goods and services.³

2013 Michigan Department of Transportation Household Survey on Bicycling – As part of the study, an online household survey was conducted to gather information from Michigan residents about their bicycling habits and spending. Responses were collected through outreach to statewide bicycle organizations, social media, cards distributed in each of the case study communities and post cards mailed to a random selection of households in the two Detroit neighborhoods. A total of 88 responses from households in the two Detroit neighborhoods were collected. Estimates regarding bicycling participation among households in these neighborhoods were calculated using the 58 responses collected from the mailed post card surveys, with the exception of the proportion of bicyclists and bicycle-related household spending. Methodology for estimating these metrics is detailed in the Overview subsection of this report. A copy of the survey instrument is included Appendix C of the Phase I report.

Michigan Department of Community Health (MDCH) – The Michigan Department of Community Health provides health services to millions of Michigan residents each year and maintains information on the rate of certain diseases and medical conditions such as stroke and heart disease. MDCH data estimating the number of stroke and heart disease cases and the average health care costs associated per case were used to estimate the number of such cases and costs incurred in the two Detroit neighborhoods. These estimated costs were applied to the World Health Organization’s estimate of the percent of stroke and heart disease cases attributable to inactivity, thereby allowing a calculation of costs avoided by active bicyclists

The Centers for Disease Control and Prevention (CDC) – The CDC is operated by the United States Department of Health and Human Services and collects data on health problems throughout the country. CDC data were used in calculating avoided health benefits due to bicycling, as described above.

³For commuting by bicycle data were taken from the U.S. Census Bureau; American Community Survey; 2008-2012 5-Year Estimates, Table S0801 Commuting Characteristics by Sex. For information on the population and number of households in Michigan, data were taken from U.S. Census Bureau; American Community Survey; 2008-2012 5-Year Estimates, Table DP02 Selected Social Characteristics in the United States. Both tables were accessed at <http://factfinder2.census.gov/>.

Dun & Bradstreet (D&B) – D&B provides information on businesses by industry and location. Data from Hoovers, a D&B subsidiary, provides information on the revenues and employment of bicycle-related manufacturers and retailers throughout the state.

In-depth stakeholder interviews. – As a part of this study, key public officials, business owners and representatives of community organizations were interviewed about bicycling and the local economy. A list of interview participants is included in Appendix D of the statewide report.

Where appropriate, this case study provides comparisons between other economic research related to bicycling and the results of this study.

4- Household Spending and Bicycle-related Manufacturing

Detroit’s bicycle retail and manufacturing industry has emerged in recent years as a source of excitement and opportunity. From bicycle and watch-maker Shinola’s decision to open a flagship store in Midtown last July and showing off its new line of bicycles, to the launch of urban bicycling focused bicycle manufacturer Detroit Bikes, a variety of new bicycle business entities are popping up across the city. This section provides an overview of household spending on bicycling in the two case study neighborhoods as well as information about the growing bicycle retail sector.

4.1 - Household spending. Using information from case study communities and the relative share of commuting bicyclists in those communities compared with the state, the study team estimated the annual average household spending for the two Detroit neighborhoods on bicycling was \$60. This is less than the national average of \$90 per household, as reported by the Outdoor Industry Association in 2012, but higher than the statewide average of \$46 per household.⁴ Applying this value to the 58,300 households in the two Detroit neighborhoods provides an estimate of \$3.5 million annually in household spending on bicycles and related equipment and accessories.

As shown in Figure 3, the most frequently reported type of retail establishment for bicycle purchases was a bicycle-specific retail shop. Such businesses were the source of about 31 percent of all bicycle purchases. Another 22 percent reported obtaining their bicycle second-hand from sources like garage sales and classified advertisements.

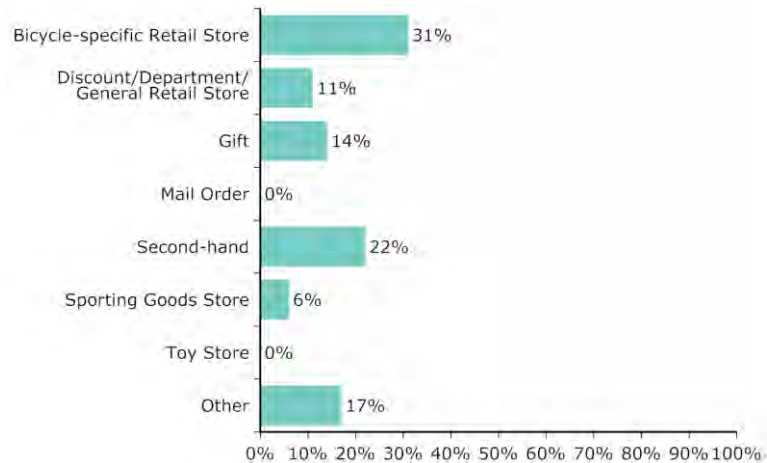
⁴ The Outdoor Recreation Economy, Outdoor Industry Association accessed at : http://www.outdoorindustry.org/images/researchfiles/OIA_OutdoorRecEconomyReport2012.pdf?167

Figure 3.
Primary Bicycle Source

Source:

BBC Research & Consulting from 2013
Michigan Department of Transportation
Household Survey on Bicycling

n = 36



4.2 - Bicycle retailers in Detroit. In addition to information from the household survey, data were also collected from Dun & Bradstreet about bicycle retailers in the two Detroit neighborhoods. Dun & Bradstreet maintains business listings for the United States and reports information such as revenue and employment. Using these data, BBC collected information on bicycle-related retail establishments in the two Detroit neighborhoods. The average three-year revenue for these businesses was \$163,000. Dun & Bradstreet also reported that these businesses employ approximately four individuals. These data serve as a conservative estimate of the bicycle-specific retail sales and employment in the area given that there may be new businesses founded since the data were collected and that many establishments that might be bicycle-specific shops may be categorized more broadly by Dun & Bradstreet (for example as a sporting goods retailer). It should also be noted that the existing retailers, while small, are growing rapidly and may have higher revenues and more employees than the data report as demonstrated by the following examples.

One local bicycle business, The Wheelhouse, traces its growth directly to increased ridership in the city. The full-service bicycle retail shop is located on the Detroit RiverWalk and the owners opened the location after volunteering for the Tour de Troit and tracking its growth. After watching the Tour's attendance grow from 200 riders in 2005 to nearly 1,000 in 2007, they decided to open a business.

Despite the growth of the Tour, in 2007 Detroit had few bicycle retail options inside the city. Using their own start-up capital and a loan from the Detroit Micro Enterprise Fund, the owners partnered with the Detroit RiverFront Conservancy to open a shop at the Rivard Plaza along the improved Detroit Riverfront.

Revenue for the business has since grown steadily, with reported 2013 revenue coming in just under \$200,000. Revenue in 2009 was just \$50,000. The shop currently employs the equivalent of five full-time employees, plus a host of guides that lead group and private bicycle tours, paid on a contract basis. In late 2013, the business expanded, partnering with Detroit Bikes, a local bicycle manufacturer, to launch a pop-up retail location in Eastern Market where they sell only American made bicycle products. In the words of Kelli Kavanaugh, one of the owners:

“Our retail has grown, our tours have grown, our business has grown steadily. In 2005, the idea of people riding their bikes to work in Detroit was fantastical. Now we see more and more people riding to their job at the Renaissance Center. The change in this city has been transformative.”

Stakeholders see this type of shop and entities like Detroit Bikes as a sign of a changing Detroit and an evolving bicycle industry:

“Bicycling is changing right now. The growth is not in light carbon frames, it’s in daily rider bikes. Bicycling for transportation is becoming more popular in Detroit and across the US.”
– Kelli Kavanaugh

Another bright spot in Detroit’s bicycle industry that has emerged within the last decade is the collaborative partnership between the Hub of Detroit and Back Alley Bikes (BAB). Situated along the Cass Corridor near Wayne State University, the Hub and BAB share a location and collaborate on programming and operations. BAB is a 501c3 non-profit organization that is Detroit’s longest running earn-a-bike program, born in 2000 out of two other non-profit programs, Detroit Summer and the Cass Corridor Neighborhood Development Corporation. Sales from used bicycles and parts at the Hub, a full-service retail shop that opened in 2008, go to fund the programming at BAB.

BAB has developed partnerships with Head Start programs and schools to create programming and training for Detroit youth.

“We take used and donated bicycles and turn them into teaching tools for youth,” said a BAB staff member. “We help youth earn bikes; we teach them how to ride safely in the road; we hire and train youth mechanics that then get paid to work in our shop.” – Jason Fiedler, Back Alley Bikes

Between their youth programming, adult mechanics classes, and affordable selection of used parts in the retail arm, the Hub and BAB serve a variety of bicyclists:

“Our location is close to the only 24-hour homeless shelter in the city, so we see a lot of people riding because they have no other choice. But we also have Wayne State [University] down the street, and the medical center. We get homeless, students, doctors and downtown professionals. Our customers are very diverse.” – Jason Fiedler

Both donations to BAB and the retail operations at the Hub have seen steady growth. Since 2008, retail sales at the Hub have grown by an eight-fold increase. Today there are five full time employees between the two entities, not counting seasonal help. Mechanics at the Hub repaired more than 2,100 bicycles in 2013, helping support the BAB to give out nearly 500 bicycles to youth that year.

Mr. Fiedler also points to improvements in bicycling infrastructure as one reason for the growth in sales and reach for the two entities:

“All the new infrastructure and the news coverage of it – that helps get more people on bikes. Even if people don’t know how to use a bike lane or what they are, when they see them go in, they want to talk about them.”

4.3 - Non-bicycle-specific retail spending. Given that there are many types of retailers in Detroit that sell bicycles, the study team used results from the household survey on bicycle spending along with the reported distribution of type of establishment to estimate the total bicycle-related spending at general retail establishments. Using this information, bicycle-related spending by households in the two Detroit neighborhoods represents approximately \$1 million in annual sales.

4.4 - Bicycle-related manufacturing in Detroit. As reported by Dun & Bradstreet, bicycle-related manufacturers in the two Detroit neighborhoods have at least \$5.2 million annually in revenues and employ 55 individuals. As with bicycle retailers, some bicycle-related manufacturing may be classified in a broader industry category and thus this represents a conservative estimate of the manufacturing-related benefits from bicycling.

Shinola, a leader in the area’s bicycle manufacturing industry, employs three employees exclusively assembling bicycles and shares administrative and support staff with the company’s other lines.

5- Health Benefits of Bicycling

The study team used information from a variety of sources to estimate the health and workplace benefits derived from bicycling in the two Detroit neighborhoods.

5.1 - Health benefits from physical activity. Physical activity helps reduce the risk of a number of costly medical conditions. Several studies quantified the value of physical activity in terms of avoided health costs. The study team quantified benefits to the two Detroit neighborhoods from physical activity based on avoided costs for treatment of strokes and heart disease. The information came from a variety of sources including:

- Data on the proportion of the conditions caused by physical inactivity from the World Health Organization;⁵
- The annual number of cases of these conditions in Michigan from the CDC (strokes) and the MDCH (heart disease);
- The annual direct and indirect costs per case from the Michigan Department of Community Health; and
- The proportion of residents who reported riding their bicycle two or more days each week in the household survey.

Using statewide heart disease and stroke case data from the CDC and MDCH, it was estimated that the two Detroit corridors experience approximately 465 cases of stroke and 1,890 cases of

⁵ *The World Health Report 2002: Reducing Risks, Promoting Healthy Life.*

heart disease annually that require hospitalization. These case numbers were applied to MDCH's cost per case estimates of about \$90,000 for stroke and \$88,000 for heart disease and the WHO's estimation that 10 percent of stroke cases and 20 percent of heart disease cases are attributable to inactivity.

Applying the rates and costs of cases for Michigan to the estimated proportion of active bicyclists⁶ in this case study community, the study team estimates that the total avoided costs for strokes and heart disease in the two Detroit neighborhoods due to bicycling is approximately \$6.5 million. A number of other costly medical conditions can also be linked to reduced physical activity including diabetes and some forms of cancer. The study team was not able to find adequate data to estimate the potential avoided health costs for these diseases.

6- Bicycle Commuting and Reduced Absenteeism - Corporate Support of Bicycling

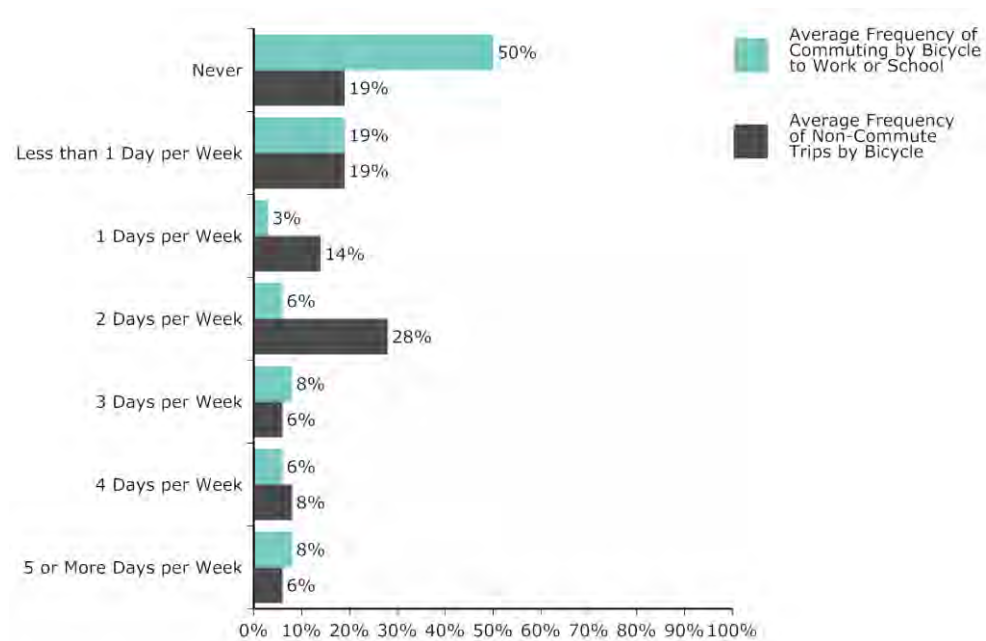
The 2012 ACS also provides some data on bicycle commuting in Detroit, reporting the total commute share at 0.3 percent⁷. The ACS asks participants to report their commute by asking how respondents "usually" commuted to work over the past week and directs respondents to only report the type of transportation that accounts for the majority of the distance. As a result, it may underreport the prevalence of bicycle commuting in the two Detroit neighborhoods given that some individuals may not "usually" bicycle and that many bicycle commuters may combine their bicycle commute with other types of transportation including public transit and carpooling.

The study team also asked bicyclists in the household survey about how often they use their bicycle for commuting or other types of transportation. Results are shown in Figure 4 below. While about half of responding bicyclists report never commuting to work or school by bicycle, more than 30 percent do so at least weekly. Non-work/school transportation by bicycle, including running errands or attending social events, is more common.

⁶For the purposes of this study, active cyclists are defined as individuals who reported using their bicycle two or more days a week.

⁷ U.S. Census Bureau; American Community Survey; 2008-2012 5-Year Estimates, Table S0801 Commuting Characteristics by Sex.

Figure 4.
Average Frequency of Commuting and Non-work/school transportation among Bicyclists



Source: BBC Research & Consulting from 2013 Michigan Department of Transportation Household Survey on Bicycling
n = 36

In a city with low vehicle ownership and public transportation challenges, many stakeholders noted the increasing importance of using bicycles for transportation. Stakeholders across the city pointed to this as having a significant impact on low-income residents.

“There is a huge impact [from improved infrastructure] because bicycling allows more people to access reliable transportation in this city. We have low car ownership and a poor public transit system. Bikes give people an option to get to work and get around.”
– Heather Nugen, Back Alley Bikes and the Hub of Detroit

6.1 - Reduced absenteeism. Increased bicycling for transportation or recreation can have benefits for employers. The London School of Economics estimates that active bicyclists in the workplace miss one fewer day of work per year than non-bicycling workers,⁸ and research published in the Journal of Occupational and Environmental Medicine estimates that one work day absence equates to an average of \$341 in lost productivity.⁹ Using the proportion of active bicyclists¹⁰ in the two Detroit neighborhoods along with an estimate of the working population

⁸ The British Cycling Economy Gross Cycling Product Report. London School of Economics

⁹ The Health and Productivity Cost Burden of the “Top 10” Physical and Mental Health Conditions Affecting Six Large U.S. Employers in 1999, by Dr. Ron Z. Goetzel, et al.

¹⁰For the purposes of this study, active cyclists are defined as individuals who reported using their bicycle two or more days a week.

and the estimated cost of absenteeism per day, the study estimated that the total benefits to the two Detroit neighborhoods due to reduced absenteeism are approximately \$3.9 million.

7- Bicycling Events

Several major bicycling events are helping create bicycle culture and making Detroit a bicycling destination. Organizers see these events catalyzing return trips to the city to revisit destinations seen on major rides. This section provides an overview of bicycle events and clubs along with a summary of event participation and spending from the household survey.

7.1 - Detroit bicycle events. Several major bicycling events are helping create bicycle culture and making Detroit a bicycling destination. Organizers see these events catalyzing return trips to the city to revisit destinations seen on major rides.

One of those events is Slow Roll Detroit, a free weekly ride through the city that is known for attracting a diverse array of bicyclists. Event organizers started the Monday night ride three years ago with about 10 bicyclists, and it has since grown to attract more than 1,600 riders.

Stakeholders in Detroit see the growth of Slow Roll as an indicator of a growing bicycle culture in the city.

“It’s exploding. The sheer numbers are stunning, and reflect the appetite for bicycling in the city. Agencies need to find a way to address the excitement. It is tremendously exciting and gives us a vision for the future.” – Tom Woiwode, Director of the GreenWays Initiative, Community Foundation of Southeast Michigan

Another example is the Tour de Troit, the city’s largest bicycling event and now the largest formal bicycling touring event in the state of Michigan (based on 2013 participant data). The tour raises awareness of biking as a mode of transportation and publicizes the growing greenways network in the City of Detroit. Tour de Troit is also a non-profit organization that produces and supports other events that promote bicycling and health, including the Martin Luther King, Jr. Memorial Bike Ride, PaczKi Run, Run du Nain Rouge, and Cycle Into Spring.

With a 30-mile course that runs throughout the city, the Tour has grown over 13 years from 50 riders in 2002 to more than 6,000 riders in 2013. The event has attracted riders from states across the Midwest and from Canada. The Tour has raised nearly \$160,000 to support greenway projects and planning, including more than 17 miles of bicycle lanes in the city.

Beyond raising funds for bicycle infrastructure, organizers see the Tour having a larger but less-quantifiable economic impact:

“Anecdotally we hear that our events are a gateway. We have a stated mission to open people’s eyes to cycling, and to the City of Detroit.” – Kelli Kavanaugh, Co-organizer Tour de Troit

A local advocate, Todd Scott of the Detroit Greenways Coalition, echoed these sentiments:

“The biggest economic boon (from these events) is that people have a new view of Detroit. It has nothing to do with them coming down for the day and buying some gas and a pop. For people that have never seen the city, aside from Comerica Park or the Lodge, they are blown away and decide they have to come back to see something they saw, to eat at our restaurants. [...] No one has tried to measure that. The weekly Slow Roll ride has stories of people that have moved to the city because of what they saw on the ride.”

Some event organizers view their role as helping people discover Detroit while providing a fun recreational experience:

“The generation prior to mine fled the city and didn’t look back. The health of Detroit is important to the entire state. If we can bring people back here, that’s important. Putting people on bikes is a way to do that. They see the architecture, the history, and the potential we have. And they want to come back.” – Kelli Kavanaugh

7.2 - Bicycle clubs. Beyond formal bicycle tour events, a host of smaller events have popped up across the city that are helping build a diverse and vibrant bicycle culture. Among them is the Detroit Bike & Brunch, a biweekly Sunday ride that started in 2012. Participants gather at a starting location, ride to a restaurant, eat brunch, and ride home. According to the Detroit Bike & Brunch website, “It is our mission to enrich bicycle culture while simultaneously educating others on the benefits of biking for their personal well-being as well as the well-being of their community.”

“Events like Bike & Brunch have gotten a lot of people to ride a bike that wouldn’t normally. And they have an economic impact, too. Beyond having a group fill a restaurant with 10 to 20 hungry bicyclists, event organizers spread the word about the restaurants via social media, and have in some cases developed a regular following among Bike & Brunch members.” – Todd Scott

Meanwhile, neighborhood bicycle clubs have formed across the city. Similar to neighborhood social clubs, these have different geographic or topical focus. Groups include:

- Grown Men On Bikes;
- Born Riders;
- Detroit Bike Nation; and
- The Eastside Riders.

Some of these groups are just a few years old and have a social or community focus to raise awareness of crime or safety issues in city neighborhoods. “It’s emerged as a place to channel energy into something positive,” said Mr. Scott.

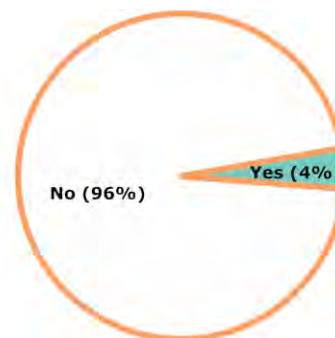
7.3 - Results from the household survey. As shown in Figure 5, about 4 percent of residents in the two Detroit neighborhoods are estimated to have participated in a bicycle event or taking a trip related to bicycling during the past year. Those who reported this type of participation typically only attended a few events.

Figure 5.
Percent of Residents that Participated in a Bicycling Event or Bicycling-Oriented Vacation in Michigan in the Past Year

Source:
BBC Research & Consulting from 2013
Michigan Department of Transportation
Household Survey on Bicycling

Note: Due to limited survey responses, event participation is estimated based on ACS bicycling participation data and data from the four remaining case studies.

Have you participated in an organized bicycle event in Michigan (e.g. Bike Ypsi Fall Ride, Tour de Troit) or taken a vacation in Michigan during which bicycling was a key activity (i.e. bicycling-oriented vacation) in the past 12 months?



The study team used information from the household survey to estimate the total spending at events by bicyclists from the two Detroit neighborhoods. Respondents were asked to estimate their expenses for food, travel and other expenses. Based on this information, the study team estimates that bicyclists in the two Detroit neighborhoods spend approximately \$1.6 million annually on bicycle-related events and travel.

Phase II of the study further quantifies the impacts of events and tourism spending on the statewide economy.

8- Community Support and Infrastructure

This section provides an overview of bicycling infrastructure and the growth of bicycling in Southwest Detroit and the area around the Conner Creek Greenway. The overview is followed by a discussion of the unique role of public/private partnerships in the development of infrastructure in Detroit, details on bike share in Detroit and results from the household survey on the value of infrastructure in these two neighborhoods.

8.1 - Southwest Detroit. With over 17.2 miles of bicycle lanes and shared-use paths in place, Southwest Detroit boasts the largest concentration of bicycle infrastructure in the City of Detroit, with routes that wind through three historic neighborhoods, Mexicantown, Corktown and Southwest Detroit. The Southwest Detroit Greenlink was constructed through a collaborative effort between the Southwest Detroit Business Association (SDBA), MDOT, the City of Detroit, Community Foundation for Southeast Michigan, Tour de Troit, and the Greater Corktown Development Corporation.

The Greenlink is the result of more than a decade of work by the SDBA, a coalition of businesses and community interests working on a variety of economic development initiatives in Southwest Detroit. After other organizations proved unable to implement the vision for the Greenlink, the SDBA became the institutional parent, shepherding the Greenlink through several phases of design, funding and construction.

Given its primary role as a business association, the SBDA's work to manage bicycle infrastructure is an unusual model. "It's interesting to have a business association manage the

Greenlink,” said Tom Woiwode. “Business entities don’t always immediately understand the economic benefits of this kind of infrastructure.”

This unique role fits the needs of the community in Southwest Detroit.

“SDBA is a business association, but our philosophy is ‘business building community, community building business.’ They go hand in hand. Even before we saw millennials moving into Corktown, Midtown and Springwells Village, bicycling was how many residents of Southwest Detroit got around. It is their transportation option. Businesses want bike racks. We want to encourage it because it makes good business sense to do so. It’s about making it convenient for the customer and creating an asset for our businesses.” – Theresa Zajac, Southwest Detroit Business Association

In addition to managing the design and maintenance of the Greenlink, the SDBA maintains the 127 bicycle racks available along the route. They see bicycling as a mode of transportation serving two primary audiences.

*“We have more young adults in their 20s and 30s that are moving to Mexicantown, Springwells Village and Corktown that are using bikes for transportation and as a lifestyle choice. In the West Vernor corridor, there is a bicycle culture dominated by middle-aged men riding bikes for transportation. This is how they run errands and get places.”
– Theresa Zajac*

8.2 - Conner Creek Greenway neighborhood. One of the first greenways in the City of Detroit owes its existence to the Super Bowl. When Detroit was named the host of the 2006 NFL Super Bowl, city officials began looking for ways to invest in improvements between the Detroit City Airport and downtown. The Detroit Eastside Community Collaborative (DECC) used this opportunity to catalyze the design and construction of the first phase of the Conner Creek Greenway, with portions of the path running adjacent to airport property.

Completed before the better-known Detroit RiverWalk, Conner Creek was the first greenway in the City of Detroit. Today the Greenway is DECC’s signature project. The Greenway is a combination of on- and off-road facilities, with six of nine planned miles currently installed, representing over \$3.5 million in investment. DECC is responsible for the design, construction, maintenance and fundraising for the Greenway. The organization has a formal arrangement with the Greening of Detroit to maintain the greenway through a larger workforce-training program.

The evolution of the Conner Creek Greenway reflects the changes in the past few decades of community and economic development in Detroit, and the importance of greenways and bicycle infrastructure in stabilizing neighborhoods. DECC was founded in 1992 as a community development entity largely focused on strengthening nearby neighborhoods by providing affordable housing and housing-related services.

Faced with the economic challenges in the early 2000s, DECC re-focused its mission and began looking for new ways to encourage community stability and investment. Thanks to funding support from the Southeast Michigan Community Foundation, DECC turned to greenway

infrastructure investment as a new community development strategy. According to Libby Levy from DECC:

“Stabilization is the best way to describe the impact. In a city that was seeing such a sharp decline in every economic indicator, building the Greenway was a way to stabilize the Eastside. The greenway was about creating jobs, increasing safety and reducing blight. We’re now learning through this process that greenways do help stabilize home values, so they have a long-term benefit to the community.”

“The Conner Creek Greenway has been one of the real regional success stories,” said Tom Woiwode. DECC staff members highlighted several pieces of evidence on the role of Conner Creek Greenway in improving safety and enhancing the brand of Eastside:

- Milbank Road was an abandoned dirt road that had become a dumping ground for trash and a destination for drag racing. Now part of the Greenway, it is no longer a source of blight. “When Nortown CDC converted Milbank [it] made a huge difference in stabilizing that part of the neighborhood,” said Alex Allen with DECC.
- The City of Detroit is installing new amenities in Chandler Park, adjacent to the Greenway.
- St. John Health developed a plan to convert its aging, underused North East Community Hospital into a senior housing community called “Conner Creek: A Partnership for Healthy Lives.” DECC member, Nortown CDC, highlighted the connection between the facility branding and the Greenway: “They invested in that branding for a reason. This investment is helping give the neighborhood a new identity,” according to Ms. Levy.

Today, DECC’s mission is to transform the Eastside of Detroit by creating active greenways that connect people and communities.¹¹ DECC partners with a variety of stakeholders to put on programming that connect youth and adults alike to the Greenway, including Camp Greenway, youth and adult walking clubs, bicycle tours, and health fairs. They also host Cycle into Spring, an annual 20-mile bicycle tour of the Conner Creek Greenway that is held each May, in partnership with Tour de Troit. Now in its third year, the event has grown from about 200 participants in 2012 to nearly 500 in 2013.

Beyond DECC’s partnerships, the Greenway plays an important role as a transportation connection to the rest of Detroit. “A lot of people are using the greenway without knowing it,” said Mr. Allen. “It gets every day use, use for transportation purposes. We think that makes it a true urban greenway.”

8.3 - Public/private partnerships for infrastructure and economic development. The creation of the Conner Creek Greenway development and bicycle investments in Southwest Detroit highlight the unique way in which Detroiters have overcome fiscal challenges and uncertainty. Businesses, foundations and community organizations have worked together to facilitate infrastructure rather than relying solely on financial support from the City of Detroit. This is a new model when compared with other major cities throughout Michigan and the

¹¹ <http://www.connercreekgreenway.org/>

country and is based on public-private partnerships to advance bicycle projects. As Todd Scott highlighted, Detroit has a “different philosophy about becoming bicycle-friendly. We don’t fit the mold in a lot of ways.”

One major part of this new model has been substantial support from the philanthropic community. A prominent example of this support is the Community Foundation of Southeast Michigan’s GreenWays Initiative. Launched in 2001 as part of a long-term regional vision to improve and enhance the quality of life in southeast Michigan, the GreenWays Initiative has helped community organizations build bicycle infrastructure, stabilize neighborhoods, connect residents and spur economic development.

By leveraging grant dollars and bringing together public officials and funders, the GreenWays Initiative has resulted in an investment of more than \$100 million for the planning and construction of a greenways network that links together communities in southeast Michigan. When all of the projects funded through the GreenWays Initiative are completed, there will be more than 100 miles of new trails and pathways connecting more than 80 municipalities across southeast Michigan.

One of the designers of the Initiative described the goals in the following manner:

“We wanted to use land to get communities to work together. This initiative was a lot less about building greenways and a lot more about tying communities together, about bridging gaps in a racially and economically segregated region. We looked at 23 different communities across the US to figure out what made those programs effective. It was abundantly clear that the standard protocol used to build green infrastructure in those other places was not going to work in Southeast Michigan. We didn’t have a public agency that crossed jurisdictional lines, nor did we have a public mechanism. We were going to have to invent something on our own.” – Tom Woiwode, Director of the GreenWays Initiative, Community Foundation of Southeast Michigan

The solution was \$25 million in foundation and private contributions that have helped the GreenWays Initiative assist communities and organizations to develop greenways plans and projects. That \$25 million helped leverage another \$90 million of matching investment from local governments and other sources to expand greenways across seven counties. The Community Foundation ended its grant-making portion in 2006, but stakeholders agreed that the initiative continues on as projects continue to expand.

“This was never just about greenways, it was always about getting people to rethink environment, rethink their relationship to one another, and getting jurisdictions to work across lines. It was about finding benign ways for people to sit down at a table and work collaboratively on something. It’s had the added benefit of improving health, giving people new access to transportation.” – Tom Woiwode

8.4 - Bikeshare Programs

Similar to efforts underway in other Michigan communities, bicycling is being embraced as a strategy that many in the business community view as a tool for attracting talented young

professionals and a way to brand downtown Detroit as a vibrant place. Perhaps the most notable sign of this is the Quicken Loans/Rock Ventures effort last year to create a bicycle-sharing program in downtown Detroit for some of its 9,200 downtown employees.

Initially, 48 Breezer bicycles were made available for no cost to Rock Ventures employees, parked in stations outside eight properties in and around Detroit's central business district: Compuware, M@dison, One Woodward, 1528 Woodward Avenue, Chase Tower, Financial District Garage, 1001 Woodward Garage and Two Detroit Garage.

By the end of the summer of 2013 more than 1,600 employees were enrolled and the program was getting enough use to average two rentals per bicycle per day. The success of the program convinced Rock Ventures officials to only remove the exterior exposed racks for the winter, making the program available year-round.

Representatives from Rock Ventures business development unit took the bike sharing program from an idea to implementation in just 2.5 months. The company was able to speed up the process by installing station racks on their property, solving insurance and other issues that sometimes can delay implementation.

The bike sharing program was also used as a key part of Rock Ventures internship program. In the summer of 2013, they had 1,100 paid interns hired on the downtown campus. Using the bike share, they were able to offer interns a unique Detroit experience.

"We had 1,000 interns that were going to show up in June. We wanted a way to help these young people interact with the City of Detroit. We wanted to get them outside of the confines of downtown and see more of the city. We want Detroit to be a vibrant place, someplace to start your career. Putting a bike on a rack for a kid to use while here, that's not a tough thing to do. But it has a big impact." – RJ Wolney, Business Development Director with the Quicken Loans Family of Companies

Now that the program has been in place for almost a year, Rock Ventures officials plan to continue it. "We've had a great response, and we're going to keep it going," Wolney said. He also highlighted the economic impact of the bike sharing program to Quicken Loans and Rock Ventures employees:

"Investing in this program has been more of a 'why not' than a 'why.' We're building a downtown corporate campus. The intent is for it to be active, to have engagement on the first floor of our buildings, with retail, and people walking. We want interaction between buildings and interaction between people on the street. Are people more excited to be down here, if they can ride a bike over to Eastern Market? There should be more options and choices for people than getting in your car for lunch. By the time you get to your car, get it out of the ramp, there's a lot of dead time from a productivity standpoint. It's hard to truly translate that into an ROI of a certain percent. But look at the number of employees we have here in Detroit. We've created 6,500 jobs in two years. This is another one of those things that's part of the puzzle of making sure people have an awesome work experience."

The Quicken Loans/Rock Ventures bike share program is a private system open only to employees, but Wayne State University (WSU) and other city partners have been working toward a public bicycle share system. WSU contracted with a consulting team in 2013 to complete an in-depth bike share feasibility study.

The study recommends a first phase installation of 35 stations and 350 bicycles, with station locations scattered throughout Downtown and Midtown, as well as a few other stations in nearby neighborhoods. The estimated cost to launch the program was quoted at \$7.5 million over five years. WSU is hoping for a 2015 launch, and is in the process of seeking funding from grants and potential sponsors.

Lisa Nuskowski, a Wayne State official, sees a public bike share system as way to improve transportation, enhance the student experience, and ultimately, keep students in Detroit after graduation:

“We see value in having a number of ways of getting students, faculty, and staff around campus and the city. We’re also trying to find ways to get more students to think about making Detroit their home. This project is one way to bring the resources of the University together with various partners to create something impactful.”

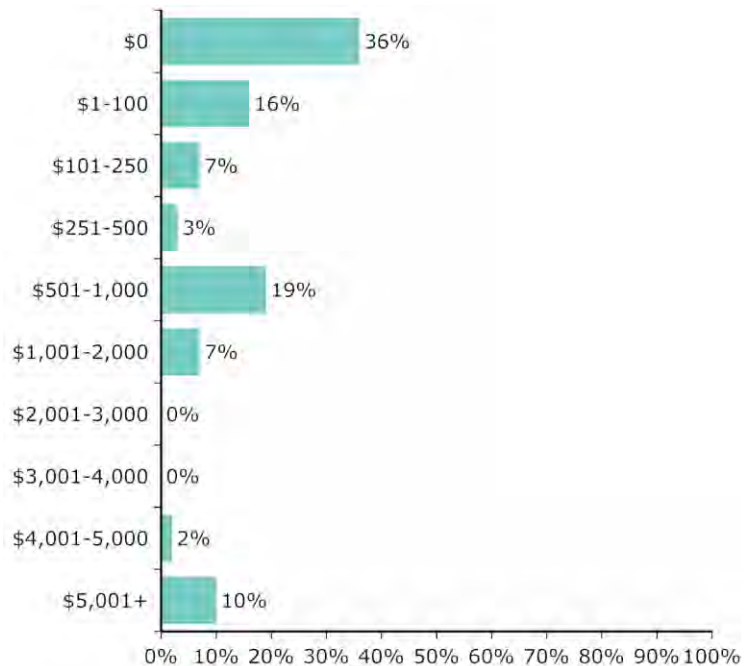
8.5 - Value of bicycle infrastructure. Residents in the two Detroit neighborhoods also report substantial value from the availability of quality bicycle infrastructure. The study team also wanted to quantify the value placed on bicycle-specific infrastructure such as bicycle lanes, cycle-tracks and shared-use pathways. As shown in Figure 6, about half of residents placed an annual value of accessing bicycle infrastructure at more than \$100.¹²

¹² It is important to note that while respondents reported a high value for a network of bicycling infrastructure, this does not suggest that Detroit should implement taxes or fees for residents to access this infrastructure. Bicycle registration and fee collection have been considered by a few jurisdictions in the past decade and have not been implemented or have been repealed for a variety of reasons (Ottawa: <http://www.ottawasun.com/2012/01/13/staff-to-council-no-bicycle-licences>; San Diego: <http://calbike.org/san-diego-repeals-bicycle-license-law/>; Minneapolis and Minnesota: <http://www.dot.state.mn.us/bike/other.html>, Long Beach: <http://latimesblogs.latimes.com/lanow/2011/02/long-beach-eliminates-bike-registration-law-that-dealt-steep-fines.html>).

Figure 6.
Annual Value of Bicycling Infrastructure

Source:
BBC Research & Consulting from 2013 Michigan Department of Transportation Household Survey on Bicycling

Note:
Due to limited survey responses, infrastructure valuation is estimated based on data from the remaining four case studies.



A few studies have attempted to quantify the impact of installing specific infrastructure elements (such as a protected bicycle lane or cycle-track). One of the more comprehensive studies, conducted by the New York City Department of Transportation, showed that protected bicycle lanes increased retail sales by locally based businesses by 49 percent.¹³ Further research is needed to verify if these findings hold for non-protected bicycle infrastructure and in communities like Detroit.

9- Background on Bicycling in the Two Detroit Neighborhoods

The household survey and stakeholder interviews also provided information on the nature of bicycling in the two Detroit neighborhoods including:

- Overall ridership;
- An overview of recreational riding;
- Barriers to increased bicycling;
- Overview of government support and infrastructure growth throughout Detroit; and
- Organizations promoting and encouraging bicycling in Detroit.

¹³ *Measuring the Street: New Metrics for 21st Century Streets*. New York City DOT.

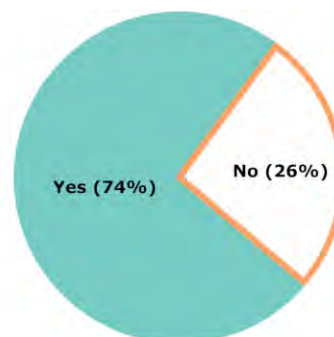
9.1 - Overall ridership. As shown in Figure 7, about one-quarter of adult residents are estimated to have ridden a bicycle in the past year. Those respondents who report having ridden a bicycle in the past 12 months are considered “bicyclists” in the analysis of this report.

Figure 7.
Residents Who Have Ridden in the Past Year

Source:
BBC Research & Consulting from 2013 Michigan Department of Transportation Household Survey on Bicycling

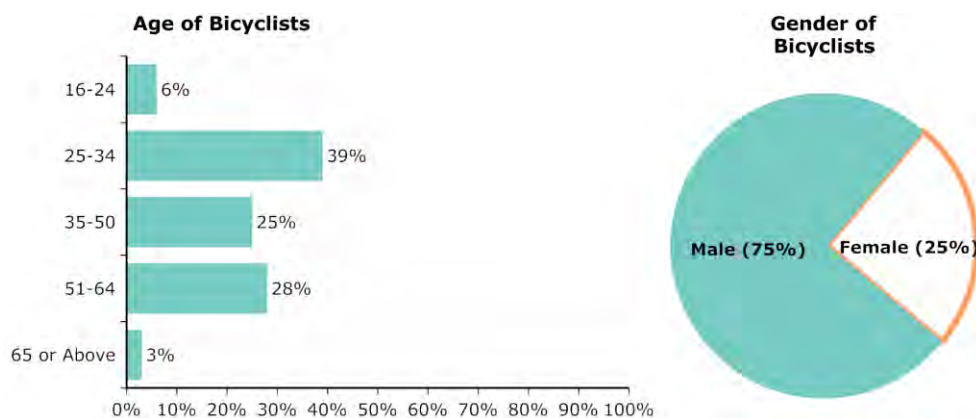
Note: Due to limited survey responses, event participation is estimated based on ACS bicycling participation data and data from the remaining four case studies.

Have you personally ridden a bicycle for any reason in the past year?



9.1.1 - Demographics. The household survey provides demographic information about residents who reported riding in the last year. As seen in Figure 8, approximately three-quarters of bicyclists in the two Detroit neighborhoods were male, and more than 70 percent were 50 years or younger.

Figure 8.
Age and Gender of Bicyclists



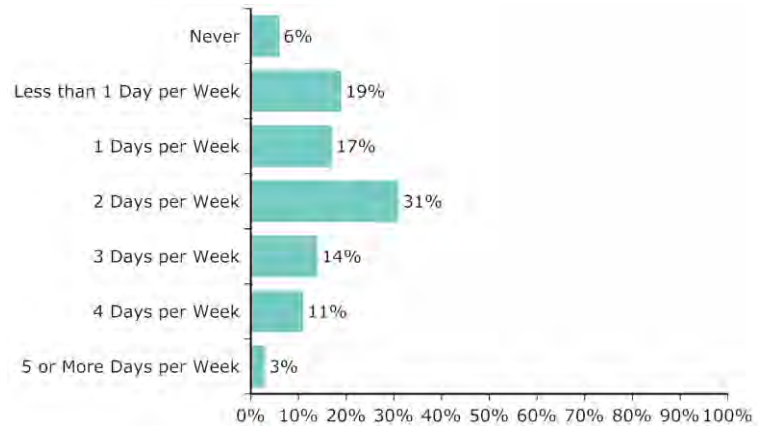
Source: BBC Research & Consulting from 2013 Michigan Department of Transportation Household Survey on Bicycling
n = 36

9.2 - Recreational riding. Among residents who have ridden a bicycle in the past year, about 19 percent reported bicycling recreationally some but less than once per week, while more than half report riding their bicycle for recreation at least two days per week. This distribution of the frequency of recreational bicycling is shown in Figure 9.

Figure 9.
Average Frequency of
Recreational Bicycling among
bicyclists

Source:
BBC Research & Consulting from 2013
Michigan Department of Transportation
Household Survey on Bicycling

n = 36

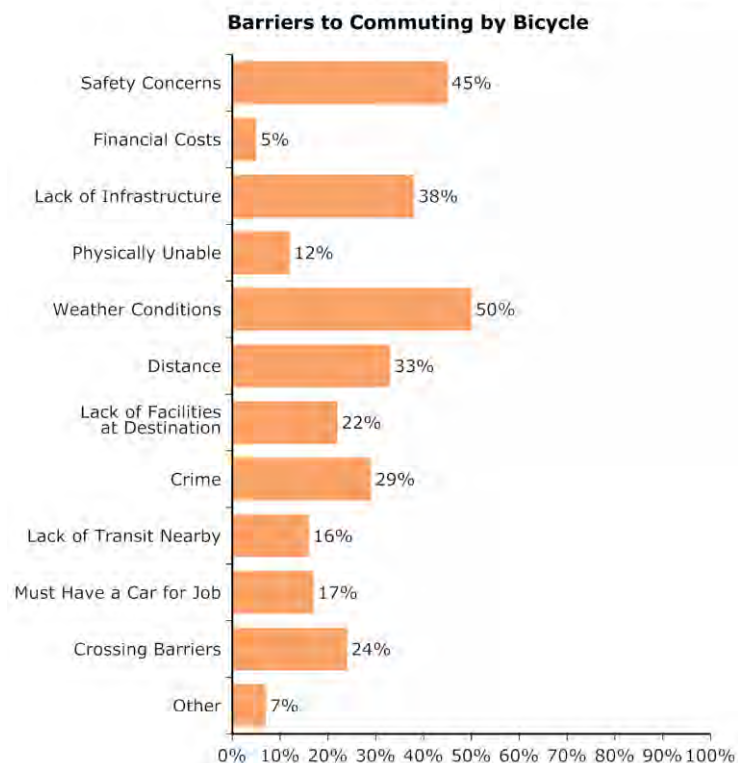
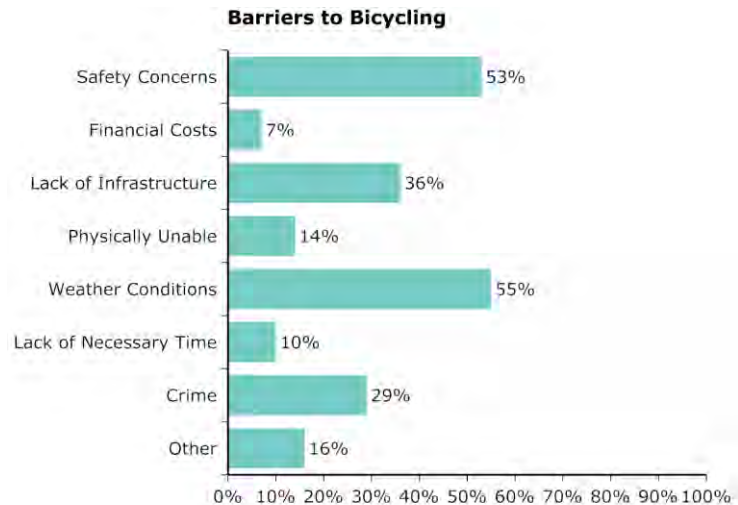


9.3 - Barriers to increased bicycling. In the household survey, residents were asked about barriers to riding more overall as well as barriers specific to commuting by bicycle. Respondents were able to cite multiple barriers rather than indicating only the largest barrier. Addressing and mitigating the most commonly stated barriers to bicycling is an effective approach to increasing ridership. The most frequently cited barriers to increased bicycling in the two Detroit neighborhoods were weather conditions (55%) and safety concerns (53%).

Figure 10.
Barriers to Bicycling and
Commuting

Source:
 BBC Research & Consulting from 2013 Michigan
 Department of Transportation Household Survey
 on Bicycling

n = 58



When asked about barriers to commuting specifically, 50 percent reported that weather conditions were a barrier, followed closely by safety concerns (45%). The next highest barriers to commuting were lack of infrastructure (38%) and distance (33%) .

9.4 - Overview of government support and infrastructure growth throughout Detroit. Despite severe funding challenges and significant turnover in city government leadership, stakeholders expressed appreciation for the role the City of Detroit has played in implementing new bicycle infrastructure:

“As time has gone on, the city has become more supportive of built environment and active living. Because of budgetary issues, it has been difficult for the city to implement all they’d ideally want to, but they’ve made some wonderful strides in putting in bike-friendly infrastructure.” – Myra Tetteh, Detroit Complete Streets Coalition

In the words of another stakeholder:

“The support from the city is excellent, despite their resource challenges. They don’t have the staff or funding, but they are on board with what we’re trying to do...They clearly think bicycling is important.” – Leah Groya, Living Lab

The support of community organizations, foundations and city staff has resulted in a substantial increase in bicycle infrastructure over the past decade. In 2013 alone, Detroit added about 80 miles of on-street bicycle lanes and marked shared lanes (sharrows), bringing the city’s total bicycle infrastructure to more than 160 miles.

The City of Detroit last adopted a non-motorized transportation plan in 2008, but the plan has not been updated since. The plan calls for more than 400 miles of bicycle lanes throughout the city.

9.5 – Promotion and encouragement. Detroit has a number of strong and collaborative advocacy partnerships that have been integral to advancing bicycle infrastructure and culture in recent years.

The Detroit Complete Streets Coalition formed in 2010 when the MDCH awarded the Detroit Department of Health and Wellness Promotion—(now the Institute for Population Health) a complete streets mini-grant. Coalition partners successfully built a diverse table of organizations working toward the charge outlined in grant funding: working with the City of Detroit to formally adopt a complete streets ordinance.

Nearly four years later, the City of Detroit has not yet adopted a complete streets ordinance, but the Coalition has made tremendous strides in educating Detroiters about complete streets, and engaging stakeholders to participate in Coalition activities. Since 2011, the Coalition has hosted more than 30 community events.

Another key organization working for improved bicycling is the Detroit Greenways Coalition, a group of stakeholders and city officials that meets monthly and promotes greenway development within the city. This Coalition developed a Detroit Greenway Vision, calling for more than 70 miles of greenways throughout the city. That vision also includes bicycle lanes to bridge gaps between the greenways and to connect with neighborhoods. These bicycle lanes are a subset of the over 400 miles of bicycle lanes proposed within the Detroit Non-Motorized Transportation Master Plan.

In addition to providing technical assistance to greenway projects, the Detroit Greenways Coalition has partnered with the Complete Streets Coalition on policy to facilitate non-motorized development. The group promotes awareness of bicycling opportunities throughout the city through bicycle events, including tours and youth bicycle programs.

Bicycling in Two DETROIT Neighborhoods

(Southwest Detroit and Conner Creek Greenway Corridors)



Population: 162,998

"Bikes give people an option to get to work and get around."

- Heather Nugen, Back Alley Bikes and the Hub of Detroit

"If we can bring people back here, that's important. Putting people on bikes is a way to do that. They see the architecture, the history, and the potential we have. And they want to come back." - Kelli Kavanaugh, Wheelhouse Detroit



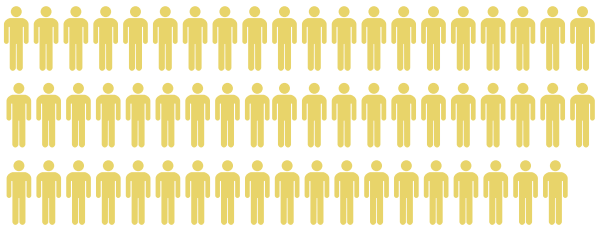
Bicycling manufacturing revenue

\$5.2 million

Total annual spending associated with bicycling events and vacations in Michigan

\$1.6 million

People employed by bicycling industry: 59



48%

Residents who place an annual value of at least \$100 on the ability to use bicycle infrastructure

67%

Bicyclists who bike at least twice a week

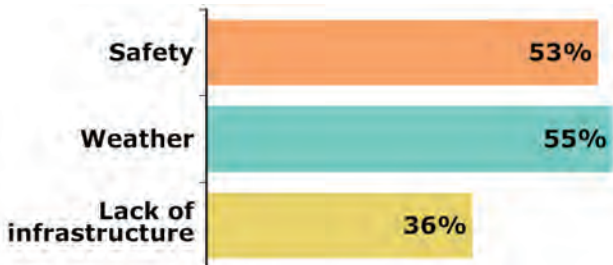
28%

Bicyclists who commute by bicycle at least twice a week

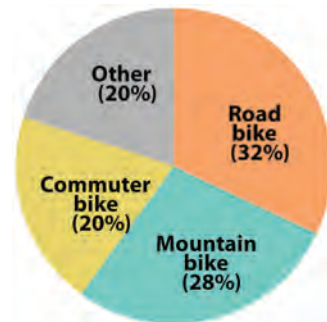
4%

Residents who participated in a bicycling event or bicycle-oriented vacation in Michigan in the past year

Key barriers to bicycling



Top primary bicycle types



Total annual economic impact of bicycling

\$20.7 million

Prepared by BBC Research & Consulting with support from MDOT

For more information contact Josh DeBruyn, MDOT Bicycle and Pedestrian Coordinator at debruynj@michigan.gov

This infographic provides a one-page summary of bicycling within two Detroit neighborhoods – Southwest Detroit and the Conner Creek Greenway Corridor¹ – based on information gathered by BBC Research & Consulting and R. Neuner Consulting for the Michigan Department of Transportation (MDOT) as part of the first phase of a two-phase study on the economic benefits of bicycling in Michigan. The infographic is accompanied by a case study report on the two Detroit neighborhoods as well as a report providing information on the state of Michigan and the data sources and methodology used for the study. A household survey was conducted with residents in the two Detroit neighborhoods, which gathered the following information shown on the infographic:

- Annual spending associated with bicycling events and vacations;
- Key barriers to bicycling;
- Percent of residents who place an annual value of at least \$100 on the ability to use bicycle infrastructure;
- Percent of bicyclists who bike at least twice a week;
- Percent of bicyclists who commute by bicycle at least twice a week;
- Percent of residents who participated in a bicycling event in Michigan in the past year; and
- Primary types of bicycles used by residents.

Below is a description of the data source for other data on the infographic:

- Population – provided by the U.S. Census Bureau 2012 American Community Survey;
- Miles of existing infrastructure – gathered from interviews with local officials during the case study process;
- Bicycle Friendly CommunitySM Rating – a rating based on a number of metrics related to bicycling support and participation from the League of American Bicyclists;
- Bicycling retail revenue – based on the three-year average annual revenue of bicycle retailers in the two Detroit neighborhoods reported in Dun & Bradstreet;
- People employed by bicycling industry – based on the three year annual employment averages for retail bicycle shops and bicycle manufactures located in the two Detroit neighborhoods as reported in Dun & Bradstreet;
- Total annual impact of bicycling – calculated from the following components:
 - Total household retail spending on bicycling reported by residents of the two Detroit neighborhoods in the household survey (\$3.5 million);
 - The total household spending on bicycle events and vacations as reported by residents of the two Detroit neighborhoods in the household survey (\$1.6 million);
 - The average three-year annual revenues of bicycle-related manufactures in the two Detroit neighborhoods as reported in Dun & Bradstreet (\$5.2 million);
 - The avoided health care costs due to physical activity from bicycling based on (\$6.5 million):
 - The statewide rates of hospitalization for stroke and heart disease from the United States Centers for Disease Control;
 - The proportion of heart disease and stroke due to physical inactivity from the World Health Organization;
 - The proportion of residents who are physical active using their bicycle from the household survey; and
 - The average cost of hospitalization for stroke and heart disease from the Michigan Department of Community Health.
 - The avoided costs of absenteeism for employees in the two Detroit neighborhoods due to bicycling based on (\$3.9 million):
 - The proportion of residents who are physical active using their bicycle from the household survey;
 - The cost of absenteeism per day from the Journal of Occupational and Environmental Medicine;² and
 - The number of days per year of avoided absenteeism due to cycling from the London School of Economics.³

¹ Southwest Detroit is defined as ZIP codes 48201, 48208, 48209 and 48216. The Conner Creek Greenway Corridor is defined as ZIP codes 48213, 48214, 48215 and 48234. This study combines the two neighborhoods into one case study community.

² The Health and Productivity Cost Burden of the “Top 10” Physical and Mental Health Conditions Affecting Six Large U.S. Employers in 1999, by Dr. Ron Z. Goetzel, et al.

³ The British Cycling Economy Gross Cycling Product Report. London School of Economics