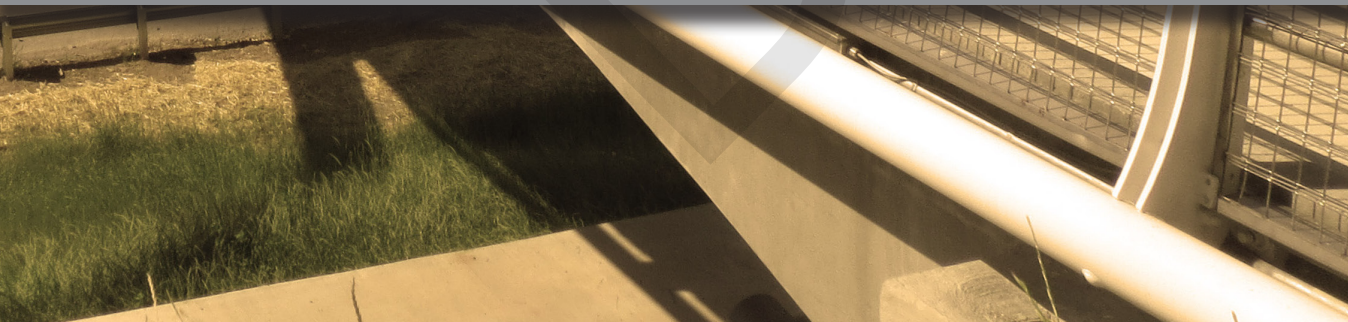


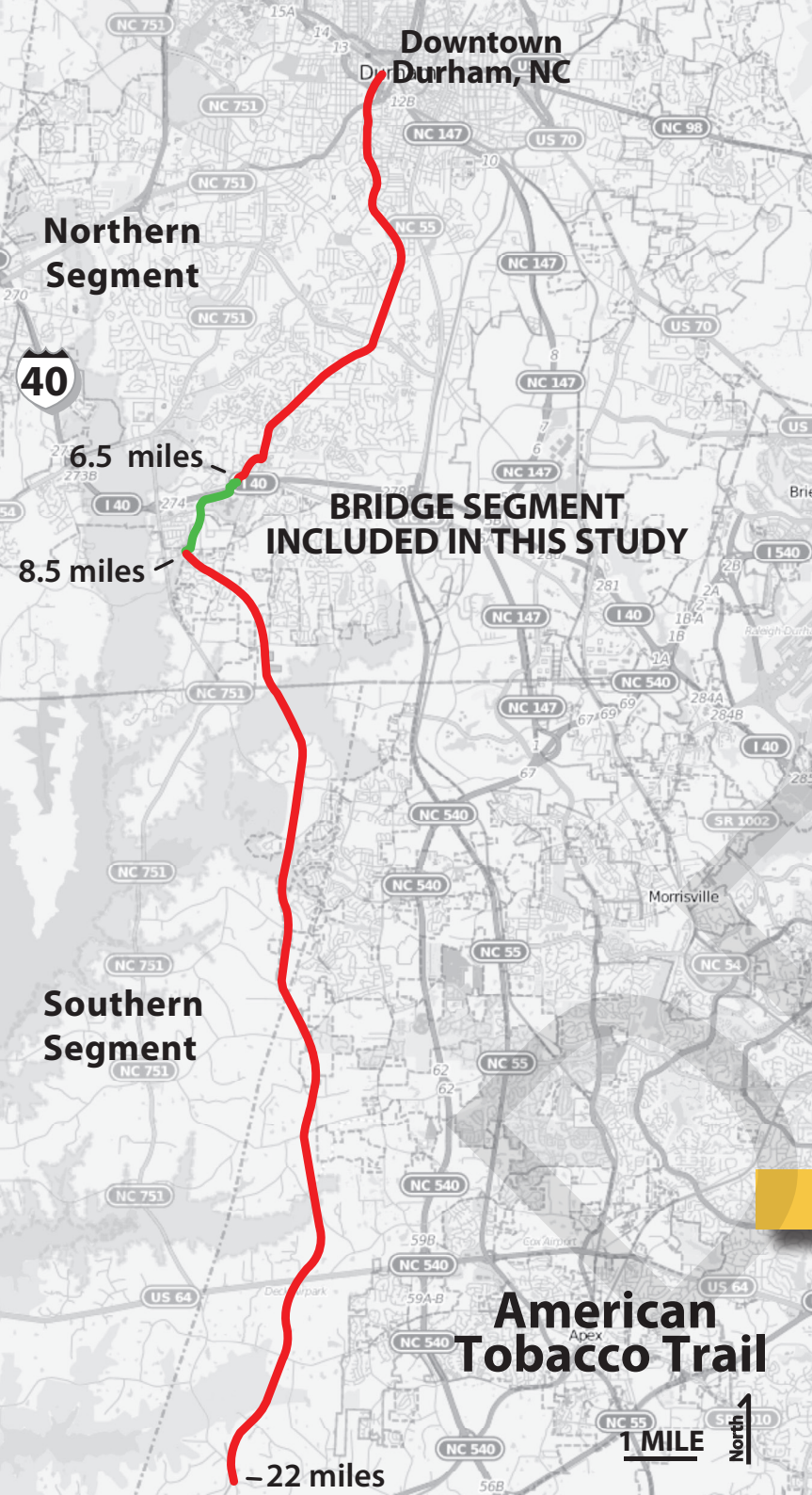


BRIDGING THE GAP

Impacts on Health, Transportation, and
the Economy from completing a critical
link in a 22-mile rail trail



A BEFORE AND AFTER STUDY EXAMINING THE
EFFECT OF A CONNECTIVE BRIDGE ON USE OF THE
AMERICAN TOBACCO TRAIL IN THE TRIANGLE REGION
OF NORTH CAROLINA



THE AMERICAN TOBACCO TRAIL

The American Tobacco Trail (ATT) extends 22 miles south from Durham, North Carolina on a former railroad corridor, and is part of the larger East Coast Greenway (ECG) network. Prior to the construction of a bicycle and pedestrian bridge over Interstate 40, the ATT consisted of two separate trail segments.

NORTH AND SOUTH SEGMENTS

The Northern segment extends nearly seven miles south from downtown Durham to NC 54. The Southern segment continues approximately 14 miles south from Renaissance Parkway to New Hill-Olive Chapel Road in Wake County. Land use and demographic characteristics differ between the Northern and Southern segments of the trail. The Northern segment generally passes through developed areas with commercial and residential uses. The Southern trail segment goes through several residential communities near its northern terminus, before passing through rural areas.

The bridge and paved connections provide a



CRITICAL LINK

resulting in a continuous 22-mile trail

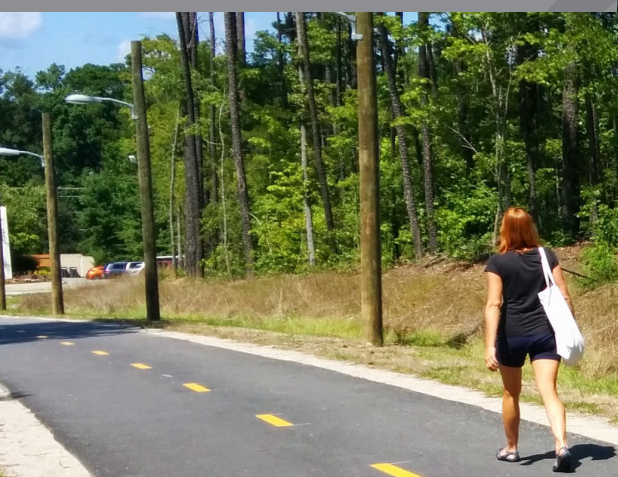
BEFORE AND AFTER STUDY

The completion of this critical link generated economic, health, recreation, and transportation impacts. Before (2013) and after (2014) data were collected and compared to determine changes in trail usage affecting transportation, health, and economic behaviors resulting from the construction of the bridge.



There was a widespread increase in trail usage, from 217,900 trips in 2013 to 508,100 trips in 2014.

This represents a **133% increase** in annual trail users following installation of the bridge segment.



Trail users impact businesses by purchasing a variety of goods and services. An IMPLAN® model was used to estimate economic effects from trips made on the trail.



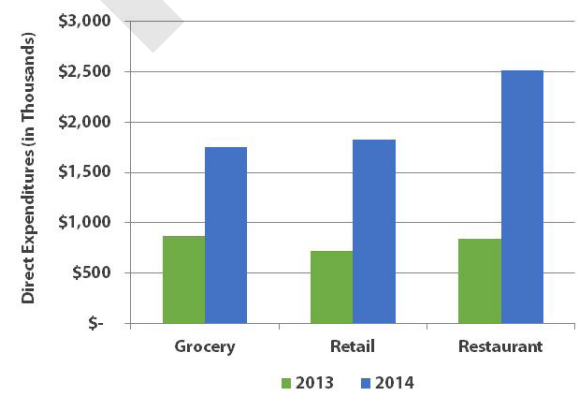
WHAT IS THE IMPACT OF THE BRIDGE ON THE ECONOMY?

DIRECT EXPENDITURES

Direct annual expenditures on groceries, retail, and restaurants related to trips on the trail rose from approximately \$2.4 million pre-bridge to \$6.1 million post-bridge - an increase of \$3.7 million. The greatest increase in trip-related expenditures was at restaurants, followed by retail stores and grocery stores. Approximately one-fifth of post-bridge survey respondents (21%) made a purchase averaging \$24 while on the trail.

Nearly 3 out of 10 trail users reported purchasing goods or services related to their trip on the trail. They **spent an average of \$16** each on goods or services.

ECONOMIC IMPACT ON BUSINESSES

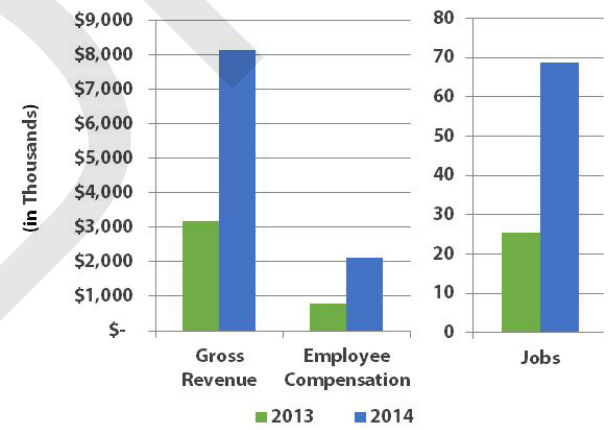


ECONOMIC IMPACT

The economic impact of expenditures associated with the use of the trail included estimates of direct, indirect, and induced impacts. Direct impacts resulted from expenditures at businesses by trail users, including grocery, retail, and restaurants. The indirect and induced impacts capture multiplier impacts of the direct expenditures. Measures for which impacts were estimated included the number of payroll employees (jobs), total payroll costs (employee compensation), and gross revenue (output).

The model indicated the difference between expenditures before and after the bridge segment resulted in an additional annual impact of 43 jobs, \$1.3 million in employee compensation, and \$4.9 million in total business gross revenues. The construction of the bridge segment cost approximately \$8.1 million.

TOTAL IMPACTS: DIRECT, INDIRECT, AND INDUCED



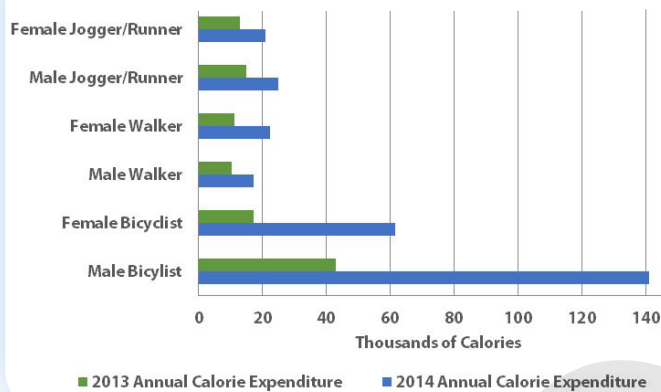


Everyone who uses the trail engages in physical activity. More than 90% of those surveyed indicated the primary purpose of their trail use that day was for exercise or recreation.

CALORIC EXPENDITURE

Calories burned were calculated from the estimated number of trips by people using the trail annually in the study area. Two factors from self-reported survey data were used: the average duration of the active portion of a trip and the type of activity on the trail. Overall, an average of 5.5 million calories (the equivalent of about 19,000 cheeseburgers) were burned weekly by travelers on the trail through the study area after the bridge opened.

CALORIES BURNED BY USERS OF TRAIL



Those using the trail were more active now that the bridge segment is open. It is estimated that people using the trail now burn **175 million more calories annually, an increase of 163%.**

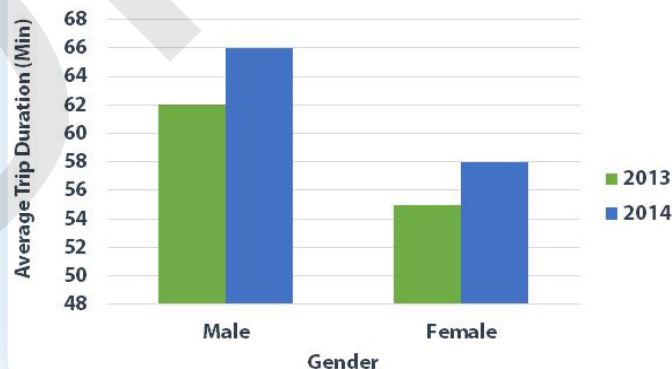
WHAT ARE THE CHANGES TO HEALTH AND SOCIETY?



INCREASE IN PHYSICAL ACTIVITY

The amount of physical activity occurring on the trail increased substantially just three months after the opening of the bridge. Now that the trail provides an avenue for travel across the interstate, people exercise an average of four minutes longer and travel 27% farther. Both men and women increased the duration of their physical activity. Adults using the trail are more likely to meet the national Physical Activity Guidelines now than prior to construction of the bridge segment.

AVERAGE TRIP DURATION



After the bridge segment opened, average travel duration for trail users increased to

162 minutes per week

A typical person on the trail now meets recommended guidelines for moderate-intensity physical activity.



LOWER INCOME TRAIL USERS

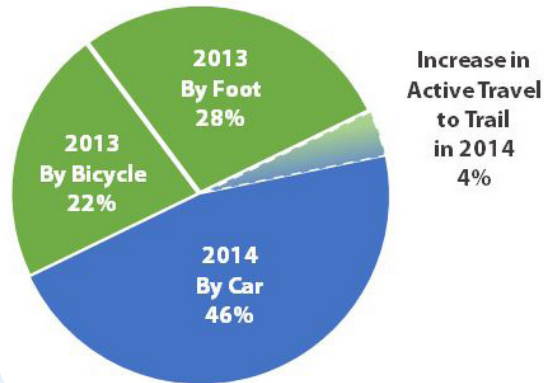
Some lower income trail users experienced activity benefits even greater than the average. Generally, the average active trip duration increased as household income increased. However, duration increased by an average of five minutes for households with incomes of less than \$15,000 and by an average of seven minutes for those with incomes of \$30,000 - \$44,999.



The bridge provides a dedicated active transportation facility that links commercial centers with nearby residential neighborhoods.

WHAT ARE THE CHANGES TO TRANSPORTATION?

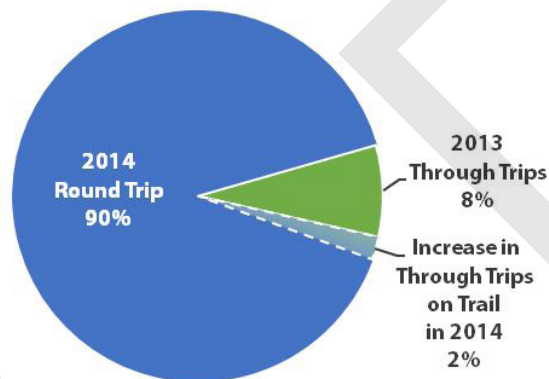
CHANGE IN ACTIVE TRAVEL TO THE TRAIL



SHIFT IN NON-RECREATIONAL TRIPS

Most people used the trail for exercise or recreational purposes and exited at the same place where they entered the trail. However, through-trips in the study area increased by 2% after the bridge was completed. The proportion non-recreational trips increased from 5% in 2013 to 8% in 2014.

CHANGE IN THROUGH TRIPS ON TRAIL

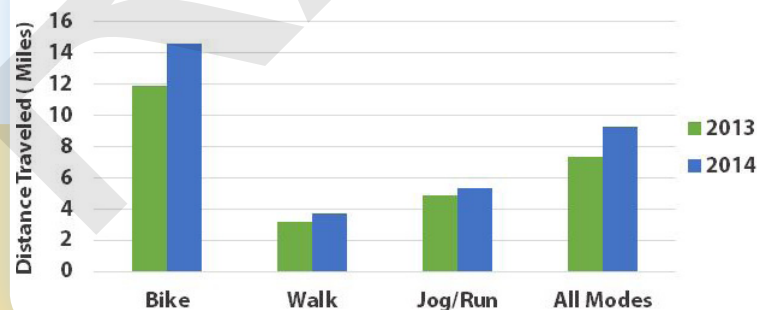


MORE OPPORTUNITIES FOR ACTIVE TRANSPORTATION

Before the bridge linked the two trail segments, those using the Northern segment were limited to a trail length of approximately seven miles. With the bridge in place, people from the Northern segment have the option to travel on the Southern part of the trail, allowing longer travel distances. Following construction, the difference in average trip distance narrowed between the two trail segments across all activity types.

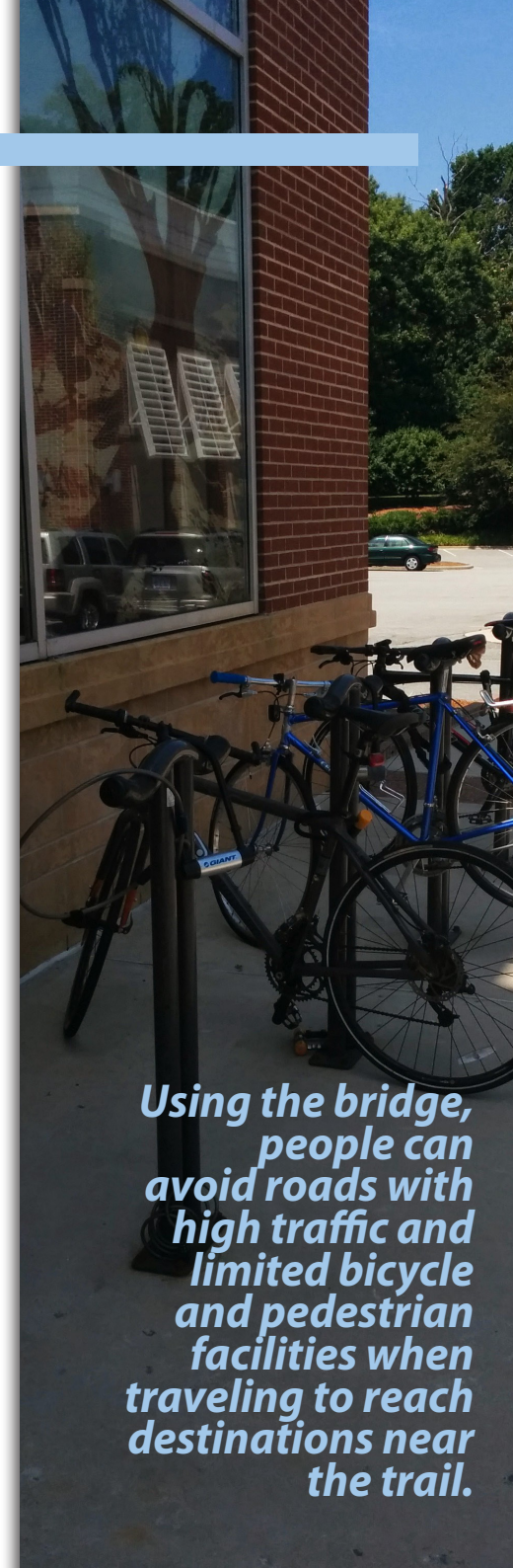
Prior to the opening of the bridge, half of those using the trail traveled by car to get to the trail, and half used active transportation (traveling on foot or by bicycle). Following the opening of the bridge, the proportion of people who walked, biked, or jogged to the trail increased by 4%.

DISTANCE TRAVELED BY ACTIVITY ON TRAIL



The average trip distance on the trail increased from 7.3 miles to 9.3 miles after the bridge opened, a 27% increase.

Using the bridge, people can avoid roads with high traffic and limited bicycle and pedestrian facilities when traveling to reach destinations near the trail.



MORE FACTS FROM THE RESEARCH

- Nearly 10% of those using the trail were children. There was a 158% increase in children counted on the trail from the before to the after period. Those traveling independently exceeded the average (172%), especially those who traveled by bicycle (187%).
- Bicycling was the primary activity for people traveling on the ATT. Overall, the proportion of bicyclists on the trail increased by 6% from 2013 to 2014.
- The typical trail user was male, 26-54 years old, held an advanced degree, and had a household income of \$60,000 - \$119,999. Similar demographics were reported by both the before and after survey respondents.
- The largest change in use by non-local users, those living in zip codes areas outside the trail, occurred among female bicyclists on the Southern trail segment. The proportion of non-local female bicyclists increased by 22% from 2013 to 2014. This may suggest that female bicyclists are drawn to the ATT as a regional destination now that it is a continuous trail.
- Prior to construction, the majority (96%) of people on the trail had visited before. In the after first-time visitors increased by 2%. This was primarily attributed to an increase in females using the trail for the first time, as these visitors increased from 4% in 2013 to 7% in 2014.
- Those using just the Bridge segment of the trail were nearly twice as likely to use the trail for a non-recreational trip purpose (14%) as compared to all trail users in the after period (8%).
- In 2013, a majority of females drove to/from the trail (55%), while a majority of males walked, ran, or bicycled to/from it (53%). While the proportions of both females and males who used active transportation modes to/from the trail increased in 2014, that shift was larger by female trail users.



RESEARCH METHODS

The research team used a 'before and after' approach to evaluate the impacts of the bridge. Intercept surveys and manual counts were conducted on two weekdays and two weekend days in May and June 2013 and again one year later in May 2014, three months after the bridge was completed. Data were collected for 13 consecutive hours (7 AM – 8 PM) on each of the four days in the before and after periods. Origin, destination, and round trip data from surveys were analyzed in tandem with information from the counts to develop an estimate of the number of annual visits by people using the trail in the study area. Saturday data collected in 2013 and 2014 were used to calculate an estimate of annual user trips in the study area by using weather data (precipitation and temperature) to create relative ratios of use for each day of the year from May 2013 to May 2014.



Although this study cannot show a causal relationship between changes in behaviors from the before to the after period, it is difficult to attribute the majority of activity increases, or "induced usage," to any event other than the completion of the bridge and its connections that now provide a continuous 22-mile rail trail. This research adds to the growing body of evidence that shows the built environment can positively influence physical activity for recreation and transportation purposes.

MAKE THE TRAIL COUNT!



ABOUT THE STUDY

The construction of the American Tobacco Trail bridge over Interstate 40 in Durham, NC provided for an opportunity to determine the impact of an infrastructure improvement following its construction. The study compared data from before the bridge opened in 2013, to data collected after the bridge segment was completed. The findings provide empirical evidence that constructing bicycle and pedestrian facilities, particularly those that complete a critical link in a non-motorized transportation network, result in measureable positive impacts.

With an annual economic output of \$4.9 million, the bridge project is estimated to provide benefits exceeding its construction costs in *less than two years.*

Three months after the bridge segment opened, the research finds *exceptional gains* in trail usage, the amount of physical activity, and economic impacts.



A before and after study of the

BRIDGE & CONNECTIONS

linking a community.

WHY IS THIS RESEARCH IMPORTANT?

As transportation decision-making processes increasingly rely on data-driven metrics to prioritize projects, it is important to determine if investments in bicycle and pedestrian projects are worth their costs. Many project prioritization processes incorporate metrics beyond those directly related to transportation, such as a project's impact on public health or economic development.

KEY FINDINGS FROM THE RESEARCH

- Average distance traveled on the trail increased by an average of nearly three miles for bicyclists and a half mile for pedestrians.
- Average duration of active travel associated with use of the trail increased from an average of 138 to 162 minutes per week.
- An additional \$3.7 million is spent on an annual basis on goods and services by those using the trail since completion of the bridge.
- Economic impacts from trail use include the creation of 43 additional jobs, \$1.3 million in additional employee compensation, and \$4.9 million in additional business gross revenues annually.

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This research was funded by the North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation, the Helen and William Mazer Foundation, and the Blue Cross Blue Shield Foundation, with support from the East Coast Greenway Alliance and the City of Durham. The authors would like to specifically thank Lauren Blackburn, Steven Bercu, Jasmine Smith, Dennis Markatos-Soriano, KoSok Chae, and Dale McKeel from these respective organizations for their guidance throughout this project. Special thanks is also extended to Walter Thomas for his data entry assistance and the 57 students and volunteers who assisted with data collection, without whom we would not have been able to conduct the research.

