

Economic and social impacts of developing the Brickline Greenway

Prepared for Greater St. Louis, Inc.
December 2022



Location: Market Street concept looking east.



Building a better
working world

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About Greater St. Louis, Inc

Greater St. Louis, Inc. brings together business and civic leaders to create jobs, expand inclusive economic growth and improve St. Louis' global competitiveness. Greater St. Louis, Inc. speaks with a unified voice, leads with a bold agenda and acts as one metro anchored by a vibrant urban core.

About Great Rivers Greenway

Great Rivers Greenway is a public agency, approved in 2000 by a vote of residents in St. Louis City, St. Louis County and St. Charles County to create a regional system of greenways, parks and trails. It is committed to making St. Louis a more vibrant place to live, work and play by developing a regional network of greenways.

The Brickline Greenway Vision
 The Brickline Greenway is a bold vision to connect people and some of St. Louis' most treasured places, creating inspiring experiences and equitable opportunities for growth. This will be a network connecting Forest Park to the Gateway Arch National Park, Fairground Park to Tower Grove Park and hundreds of destinations in between.
BricklineGreenway.org

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Executive summary

Greater St. Louis, Inc. engaged EY US (EY, we, or us) to examine the potential economic and social impacts of expanding and connecting existing trails in the City of St. Louis through the proposed Brickline Greenway (referred to as "Brickline" hereon).

The Brickline is a proposed urban trail network passing through up to 17 St. Louis neighborhoods. The Brickline has been identified as an ongoing initiative led by Great Rivers Greenway. The Brickline is one of the most transformative urban infrastructure projects in the nation. It aims to create a network of accessible paths and become part of St. Louisans' everyday experience, connecting people to schools, workplaces, neighborhoods, civic and cultural institutions and new spaces along the way.¹ It is expected to improve access to jobs and educational opportunities, which are limited by current transportation infrastructure, transit dependency and isolation.² It will also expand active lifestyle mobility and accessibility options for Americans with Disabilities Act (ADA) communities.

This Report focuses on 12.6 miles of new walking and biking paths that would connect nine neighborhoods, linking Fairground Park in the north to Tower Grove Park in the south, Forest Park

to the west and the Gateway Arch National Park to the east.

This Report presents the results of the economic and social analysis undertaken by us. The Report includes a number of key performance metrics to estimate the economic impact, such as construction spending and increased local business spending. Investment in the Brickline results in reduced vehicular emissions through transportation modal shifts and additional tree canopy. Furthermore, this investment boosts property values surrounding the Brickline, offers significant commercial development opportunities, grows the tax revenue base and supports healthy and active lifestyles.

The summary of monetized impacts associated with the Brickline are set out in Figure 1. Following project delivery, the impacts of the project far exceed the initial investment of \$245 million in building the 12.6-mile Brickline.



Location: Great Rivers Greenway Brickline Greenway Herbert Hoover Boys and Girls Club open house

Impacts

Figure 1: Summary of economic impact results³

Financial investment

\$230m
(12.6 mile Greenway)

Brickline investment (2018-2029)

\$15m
(\$ 2.5 million per annum)

Ongoing operations and maintenance (2024-2029)

Economic, social and tax impacts

\$462m

Total trail construction

up to **\$126m**

Total aggregate residential property value increase

\$53m

Total tax impact of trail construction, operations and maintenance

Annual economic impacts

\$5m

Operations and maintenance (economic output / sales)

up to **10m**

New biking / walking trips

up to **\$4m**

Aggregated avoided health costs of residents

up to **12m**

Decline in vehicle miles traveled

up to **\$82m** (906 jobs)

Associated local business activity

Equivalent to:

1,003-1,146 fewer cars per year
(based upon fewer vehicle miles traveled)

Environmental impacts: reduced emissions and increased tree planting

1. Introduction

The Brickline will build new connections across St. Louis' diverse communities and spur economic and social change. To better understand the significance of this transformative infrastructure project, Greater St. Louis, Inc. engaged EY to conduct this analysis. This Report explores possible impacts under current market conditions and does not consider potential changes in policy, program or strategy.

The Brickline is a proposed urban trail network passing through up to 17 St. Louis neighborhoods. The Brickline is a major public-private partnership led by Great Rivers Greenway (GRG) to bring to life a greenway network of accessible multi-use pathways where people can walk, run, bike, push a stroller or roll a wheelchair. The project will connect the city's vibrant neighborhoods, parks, business and arts districts, transit hubs and cultural and educational institutions while promoting equity, economic development, environmental stewardship, active lifestyles and connectivity. While the vision of the Brickline includes up to 20 miles, this Report focuses on 12.6 miles made up of two main Brickline routes (Northern Connectors and Central Connector) and two routes being created by partners

(Northern Partner Connector and Southern Partner Connector). The results outlined in this report will inform the work of Great Rivers Greenways' Equity + Economic Impact Director as they consider policies and programs to strengthen the fabric of existing neighborhoods and the economic position of current homeowners. This Report explores possible impacts without mitigation strategies present. The development of the Brickline is expected to create impacts for the City of St. Louis, especially the nine neighborhoods⁴ surrounding the network of trails analyzed in this Report.

In this project's beginnings, an international design competition and framework and planning effort (2016-2020) was launched and funded by 11 partners: Arch to Park Collaborative (now Greater St. Louis, Inc.), Forest Park Forever, Grand Center Inc., Great Rivers Greenway, Great Rivers Greenway Foundation, Green Street St. Louis, Lawrence Group, Saint Louis University, Washington University in St. Louis, Washington University Medical Center Redevelopment Corporation and the City of St. Louis.

The Brickline will encourage a healthier lifestyle and better connect people to the region's extraordinary parks, amenities and communities. The Brickline is more than walking or bike lanes; it plays an important role in connecting people and places in a car-centric city. The planning process for the Brickline has already connected people: GRG has conducted more than 300 community meetings, events and engagements to date. Originally called the Chouteau Greenway, it was renamed in spring 2020 to the Brickline. The project mission/vision statement explains, "This greenway will transform St. Louis by connecting people and our City's most treasured places, creating inspiring experiences and equitable opportunities for growth." More than just a free, accessible trail where people can exercise, commute, or explore, the project's goals include enabling equitable economic opportunities for everyone to thrive. The Brickline aims to create dynamic, active spaces and serve as a regional gathering place that encourages collaboration and boosts civic pride.⁶

Based on the principles of engagement, equity, collaboration, opportunity and sustainability, key intended outcomes of the Brickline include:

- ▶ Exceptional experience: Create a regional gathering place where people can connect to St. Louis and each other
- ▶ Civic well-being: Strengthen trust and unite communities on a common ground that boosts civic pride by making the process accountable and inclusive
- ▶ Connectivity: Connect people to St. Louis' neighborhoods, institutions, transit, jobs, destinations and public spaces
- ▶ Economic growth: Create equitable opportunities for growth and inspire continued investment in places for people to live, work, play and visit
- ▶ Environmental leadership: Become a model for excellence in ecology and engage communities in stewarding a healthy, urban environment
- ▶ Healthy lifestyles: Encourage exploration, activity, exercise and alternative transportation to enhance physical and mental well-being for people of all ages and all abilities
- ▶ Talent attraction: Provide high-quality, connected bike-ped infrastructure desired by future workforce

The planned construction of Brickline is estimated to cost \$245 million and is spread across a period of 11 years, commencing in 2018 and continuing until 2029. This is a long-term project with sub-connections being built sequentially. Design, funding, technical feasibility and governance options will all determine the speed at which the project progresses.

As of September 2022, still in early stages of planning and design, the ambitious goal of \$245 million is already 22% funded.

- ▶ 100% of the local public investment (\$15 million) is in place.
- ▶ 30% (\$22.5 million) of the total federal investment (\$75 million) is secured.
- ▶ 11% (\$17 million) of the total philanthropic funding (\$155 million) is pledged or donated.

The Brickline consists of the following four connectors as depicted in the map below:

Northern Connectors: Fairground Park at Natural Bridge Avenue, south on Grand Boulevard to Cass Avenue; west to Spring Avenue; south to City Foundry and across I-64 to the Grand MetroLink Station St. Louis Ave from Grand Boulevard to 20th Street

Northern Partner Connector: 20th Street from St. Louis Avenue to Market Street

Central Connector: From Gateway Arch National Park west along Market Street to Compton Avenue; west to Grand MetroLink Station, west along MetroLink corridor to Cortex MetroLink Station, continuing west on Clayton Avenue to Forest Park

Southern Partner Connector: From Cortex MetroLink Station, south on Sarah Street to Vandeventer Boulevard; southwest to Tower Grove Avenue; south to Magnolia Avenue at Tower Grove Park

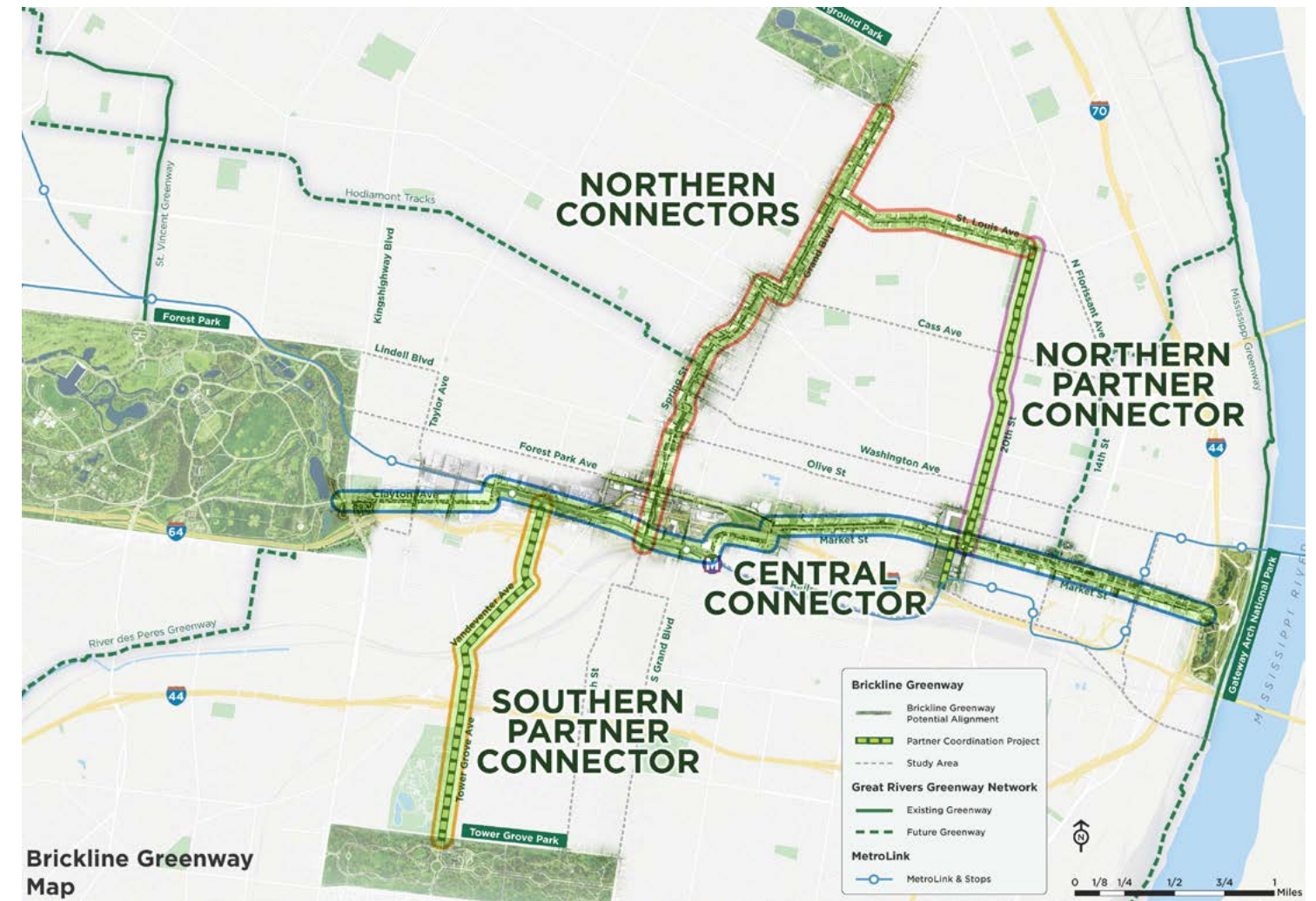


Figure 2: Concept Map of Brickline

2. Economic impacts

This section discusses the following:

- ▶ Each economic impact category and its importance
- ▶ Methodology to estimate economic impact
- ▶ Results and interpretation

Impact categories

Figure 3: Key Impact categories

Trail construction, operations & maintenance

Direct construction expenditures generate spillover impacts through (1) spending on goods and services purchased within the St. Louis MSA (indirect impacts) and (2) spending resulting from the labor income generated by the initial activity that ripples through the region (induced impacts)

Residential property valuation

Increased property values for owners and tax revenues

Commercial development

Impact associated with potential commercial investment within the 1/4 mile buffer zone, including planned and in principle development proposals from various entities, timing, scale and scope of such investment

Transportation and road safety

New access to transportation, including:

- ▶ Increased pedestrian/bike demand
- ▶ Vehicle users shifted to trails and public transportation as a result of improved walking and biking access and connectivity
- ▶ Improved road safety outcomes resulting from fewer vehicle miles traveled

Local business spending

Increased retail and associated spending adjacent to the trail from (1) St. Louis residents and (2) tourists due to increased trail use (direct, indirect and induced impacts)

Health

Avoided health care costs due to increased physical activity

Environment

Travel mode shift to active and public transportation, reducing vehicular air emissions; and increasing carbon sequestration/storage associated with tree planting and increased park and open space acreage

2.1 Trail construction, operations & maintenance

The Brickline is a major public-private partnership, involving the construction of 12.6 miles of trail (including partner projects) connecting four important parks in St. Louis. The project is estimated to be an investment of \$245 million spread between 2018 and 2029. This includes activities such as planning, design, professional services, construction, contingency, site control, operations and maintenance. The Brickline is expected to make a significant contribution to the local economy in terms of employment, income and economic output (sales). The impact estimated in this section is a result of (a) the impact of capital expenditure related to the Brickline; \$230 million between 2018 and 2029, and (b) the impact of ongoing operation and maintenance expenditure; \$2.5 million per annum from 2024 to 2029.⁷

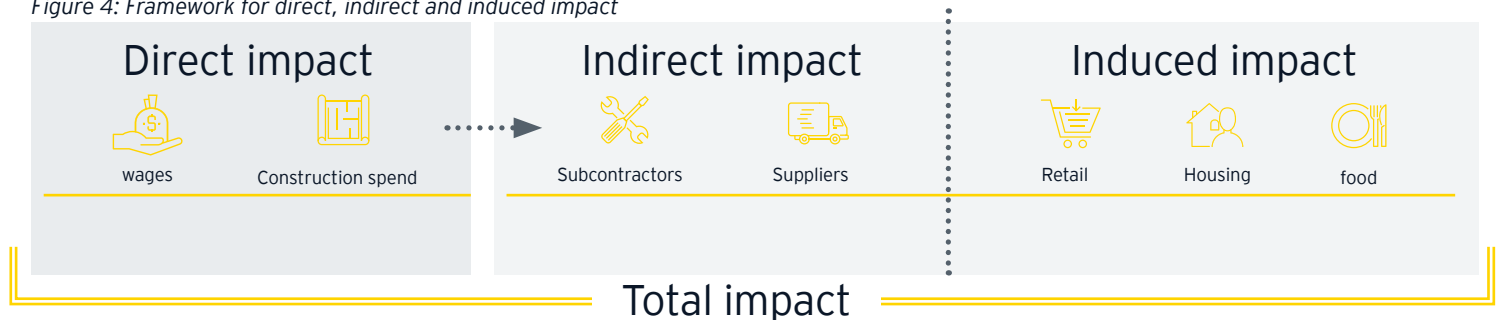
The economic impacts associated with the development and operations of the Brickline are estimated using the IMPLAN input-output economic model for the St. Louis, MO-IL Metropolitan Statistical Area (referred to as "St. Louis MSA" in this Report).⁸

The model is the representation of the 15-county St. Louis regional economy and shows the economic interlinkages among different sectors of the economy. Furthermore, it allows for the estimation of the total economic contribution of the Brickline construction through three distinct components: direct, indirect and induced. This framework helps estimation of the broader impacts of construction spending through the local economy due to the Brickline construction. The model helps estimate the potential impacts of the construction spending on employment, income and economic output (See Appendix 1).

Specifically, the above-mentioned impacts are estimated as the sum of following:

- ▶ **The direct impact:** the contribution an economic activity directly makes to an economy. (e.g., A construction company pays wages to its employees for labor incurred in building the Brickline.)
- ▶ **The indirect impact:** the contribution that an economic activity makes to an economy through the demand for goods and services it generates on the local supply chain. These are called the activity's intermediate inputs, or intermediate consumption. (e.g., A supplier increases sales of concrete by virtue of the demand raised by the Brickline construction project.)
- ▶ **The induced impact:** the contribution of an economic activity to the employee through employee spending wages on goods and services. This is the activity supported by the spending of both employees working directly in Brickline construction and operations and employees indirectly supported by the local supply chain. (e.g., A group of Brickline employees spend their wages on dinner at a local restaurant after work.)

Figure 4: Framework for direct, indirect and induced impact



Our analysis estimates that during the construction phase (2018-2029), the Brickline is expected to support \$462 million in gross output, which includes \$178 million in labor income.⁹ Construction will support 2,764 worker years¹⁰ within the St. Louis MSA.

Additionally, the annual contribution during the operations phase (2024-2029) is expected to be \$5 million in gross output, which includes \$1.7 million in labor income. Operations will support 27 new jobs in the St. Louis MSA. These results are inclusive of the direct, indirect and induced impacts.

The increased economic activity would result in total tax revenues of \$53 million across the federal (\$37 million), state (\$8 million) and sub-state (\$8 million) levels. The sub-state category includes county, city and special district tax revenues.

Figure 5: Estimated economic impact associated with trail investment, operations and maintenance

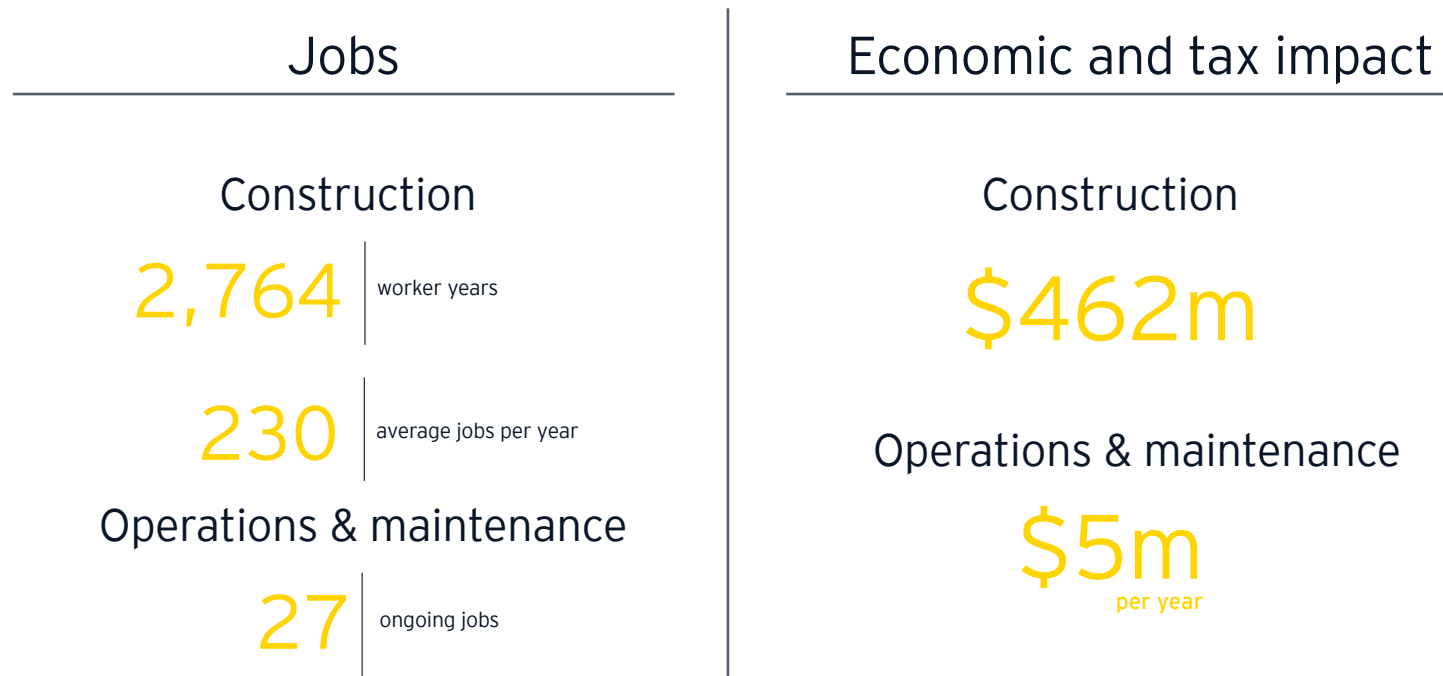
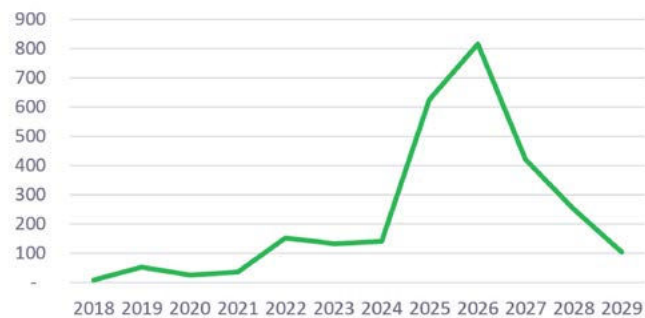


Figure 6: Jobs profile during Brickline construction



Source (Figures 5 and 6): EY Analysis based on data provided by GRG management and the IMPLAN input-output economic model of St. Louis

2.2 Residential property valuation

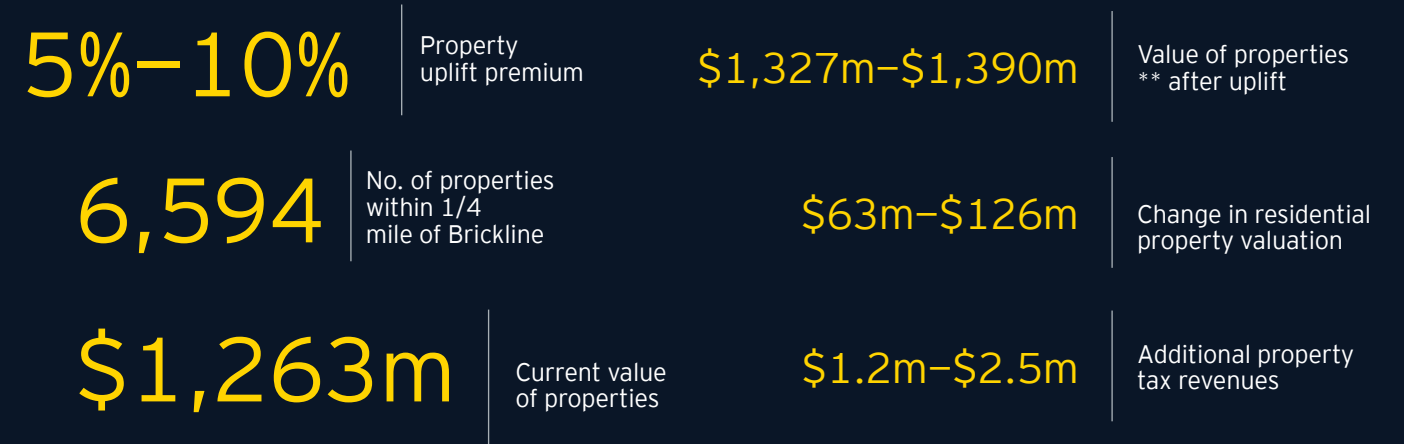
Greenways support alternate travel options; link residents to jobs, services and recreation; and enhance neighborhood aesthetics and desirability. These direct outcomes, in turn, raise the value of nearby residential properties, benefit homeowners in the form of wealth creation and result in increased revenues for public services.¹¹

In order to investigate this hypothesis, we undertook a literature review, considering cities and trails broadly comparable to the Brickline. The literature compared the value of residential properties adjacent to trails to comparable properties situated elsewhere. These studies examined the residential property valuation impacts for a study zone of 1/4 mile from the trail (Appendix 2). The research suggests that properties within 1/4 mile of the trail are associated with a value increase of 5% to 10%, an increase of up to \$126 million in the market value of residential properties within the trail buffer zone. With the prevailing City of St. Louis property tax rate of 8.25%, this implies additional tax revenue of up to \$2.5 million annually from uplifted property prices.

With potential increases in property values and rents, policymakers and community development organizations should work towards strengthening the fabric of existing neighborhoods and the economic position of current homeowners.

Rising property values have the potential to build equity for homeowners and help stabilize St. Louis' economy. St. Louis' homeownership rate has seen a decline over the past decade. Conversely, given the low homeownership rates,^{*} renters are an essential part of St. Louis' community. By taking steps to protect renters from burdensome costs, St. Louis can create opportunities for renters to transition to homeownership.

Figure 7: Estimated impact on residential property
Source: EY Analysis based on St. Louis City parcel data and MLS sales information over 2016-2021



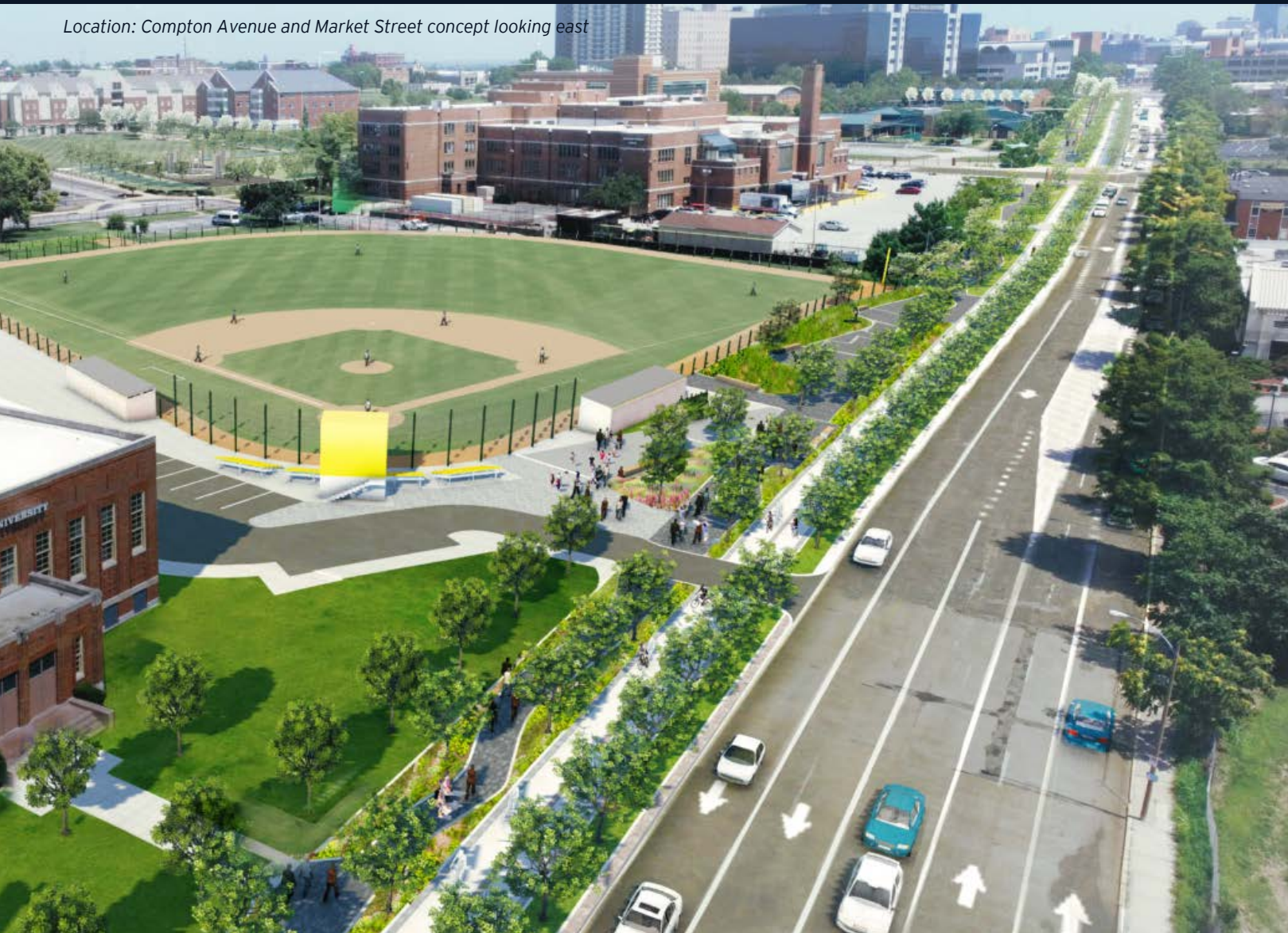
*Federal Reserve Bank of St. Louis homeownership rates

**Property taxes are calculated on the assessed value of a property.

Figure 8: Analysis of residential properties by connectors

Connectors	No. of properties within 1/4 mile	Aggregate property value (\$ million)	Average value per property (\$)
Southern Partner Connector	2,023	167	83,000
Northern Connectors	968	108	111,000
Northern Partner Connector	717	107	149,000
Central Connector	2,886	882	305,000
Total	6,594	1,263	192,000

Location: Compton Avenue and Market Street concept looking east



2.3 Commercial developments

We undertook interviews with selected state and local government representatives and not-for-profit and developer stakeholders to better understand commercial development themes in the Brickline buffer zone, including the timing, scale and types of development being targeted, planned or progressing. Desktop research was also undertaken, giving rise to a (non-exhaustive) list of developments, in concert with the interviews. A summary of the sample set of developments is provided in Appendix 3. Metrics on commercial rents, vacancies and construction and operating costs for the St. Louis market were also explored.

This section summarizes the commercial sector research and describes how the Brickline supports this sector.

“Placemaking” is the intentional use of land, community and amenities to create great places to live or visit to experience a high-quality “sense of place.” This is a collaborative process and multifaceted approach to the planning, design and management of public spaces, with the intention of maximizing shared value for the community. The development of the Brickline into a more desirable corridor and location will ultimately help stimulate the local economy through increased foot traffic, enhanced marketability of nearby assets and creation of a sense of community.

Placemaking is an important trend around the US for mixed-use and other asset types. It is important to understand the current state of the commercial real estate market in St. Louis to analyze the opportunity for growth using placemaking.

Perceived benefits of creative placemaking

90%+

Increased social connection and engagement of residents
Improved sense of place that reflects the community's culture

70%+

Enhanced community pride
Increased project value

60%+

Improved economy of the area
Improved youth engagement

50%+

Improved community health

Source: Urban Land Institute Member Survey.¹²

2.3 Commercial developments continued

Residential market

According to Redfin's Migration Report, roughly 23% of searches for residential real estate in St. Louis are made by users outside of the St. Louis market. In fact, the top origins for out-of-market searches in St. Louis are Los Angeles, Chicago and Seattle. In order to keep up with heightened demand, today's multifamily product must be well located, but also come equipped with in-place and nearby amenities. Renters prefer this ease of access and sense of community. With the multifamily sector experiencing high rent growth of 7.6% annually and stable vacancy rates, the enhancement of an outdoor amenity will only help continue this positive trend.

The Commercial Property Price Index (CPPI) is a metric produced by GreenStreet that captures US property values by major market using the prices at which high-quality commercial real estate transacts. The weighted average is derived from 50 major US real estate markets, St. Louis being one.

The St. Louis CPPI outperforms the national weighted average by roughly 9%, suggesting that there is strong investor appetite in the St. Louis apartment market¹³ and reinforcing the value of providing access for the region's core through transportation corridors such as the Brickline.

Office market

Today's office market follows a similar narrative as multifamily product. Post COVID-19, a trend nationally has been companies downsizing and moving to newer buildings that offer services and amenities. Another trend has been the desire for outdoor space, whether it be in the form of rooftops, balconies or nearby park space. St. Louis vacancy rates have climbed from 6.9% at the onset of the pandemic to a high of 9.6%. With roughly 800,000 square feet of new office space scheduled to deliver by year-end, the supply and demand complex will only get more bleak. Therefore, properties that offer a clean, new and healthy product will continue to win. The connectivity afforded by the Brickline could be used as a marketing piece to attract and retain tenants in nearby office properties.

Retail market

Typically pairing retail with another commercial use, such as multifamily or office, allows the development to act in a more self-sustainable fashion. Retail vacancy rates in the St. Louis submarket have remained steady with the historical 10-year average at 5.9%. As retail makes its return post COVID-19, the St. Louis CPPI has experienced proportionally the same bounce back as the national weighted average. Any development that increases foot traffic and acts as a destination for local residents or visitors will enhance existing property values and attract new retail users.

Similar to single-family residential trends, the multifamily, office and retail sectors all benefit when supported by an asset that creates a heightened sense of connectivity, interaction and general foot traffic. An outdoor amenity such as the Brickline will enhance the marketability of such commercial assets from an investment and ownership standpoint and attract more consumers and users.

Development around trails elsewhere

Research suggests that the development of new greenways has driven the attraction of residential and commercial investment in the surrounding zones. The estimated return on investment listed below is sourced from third party reports and often not calculated on the same basis as the economic and social impacts estimated in this report.

Figure 9: Development around trails elsewhere

Trail	Location	Trail length (miles)	Estimated return on investment	Additional details
Katy Trail ¹	Dallas, TX	3.5	40:1	The \$23 million capital investment to build the Katy Trail has resulted in approximately \$907 million in park-oriented development. Approximately \$880,000 in real estate value per acre has been created over the previous 18 years. This figure jumps to \$1.9 million within a ¼ mile of the trail.
BeltLine ²	Atlanta, GA	19 (Phase 1)	8:1	More than \$500 million in government funding has been invested in the BeltLine. In addition, there has been more than \$4.5 billion in private investment along the BeltLine corridor. Approx. 11,000 permanent jobs have been created already by new developments along the path, with a total of 30,000 expected by completion. Likewise, there have been 30,000 temporary construction jobs created, with 18,000 more expected as developments ramp up.
BeltLine (Eastside Trail) ³	Atlanta, GA	2.25	45:1	More than \$638 million in new private real estate investment is planned or underway within the portion of the Atlanta BeltLine Tax Allocation District (TAD) that surrounds the Eastside Trail.
High Line ⁴	New York, NY	1.45	11:1	Trail investment has catalyzed more than \$2 billion in new development. Since 2007, there are 3,000 net new dwelling units in West Chelsea.
Rose Kennedy Greenway ⁵	Boston, MA	1.5	40:1	This investment has created 25% of incremental residential value in the surrounding district in the first 10 years (approx. \$1.4 billion).
Indy Cultural Trail ⁶	Indianapolis, IN	8	16:1	The Indy Cultural Trail generated an increase of \$1.01 billion in assessed property value within 500 feet of the Cultural Trail from 2008 to 2014. These properties are a mix of commercial, residential, and lodging establishments, including some of the largest downtown property and development projects.

1. HR&A Advisors Inc., [Economic Value and Benchmarking Study of the Dallas Park System, February 2016](#)

2. InsiderAdvantage, [Measuring the Atlanta BeltLine's Economic Impact, March 2020](#)

3. Landscape Performance Series, [Atlanta BeltLine Eastside Trail, January 2020](#)

4. Landscape Performance Series, [High Line, March 2019](#)

5. HR&A Advisors Inc., [Ross Kennedy Greenway: Creating Long-Term Value, March 2020](#)

6. Indyculturaltrail.Org, [Cultural Trail Assessment, July 2015](#)

2.4 Transportation and road safety

The Brickline represents an important investment for the local community and will have a significant impact on travel times through the trail corridors. The placement of the Brickline and the complementing roadway lane reconfigurations has the potential to improve safety and provide operational impacts for road and trail users. Though lane reconfigurations are expected to reduce the number of travel lanes for vehicles, optimized signal timings will ensure the efficient flow of vehicles and generate significant time savings.¹⁴ The Brickline would improve the bike/pedestrian infrastructure and provide users with more transportation choices and, at the same time, reduce vehicle dependency.

This analysis estimates the impacts of mode shift from vehicles to active and public transportation systems in two parts: (1) a shift in trips from vehicles to biking and walking and (2) a shift in vehicle trips to public transportation rides due to synergy between walking, biking and transit.

We estimated the demand for the proposed Brickline using National Household Travel Survey (NHTS)¹⁵ trip data for St. Louis MSA and examined the traffic flow data from the Missouri Department of Transportation¹⁶ for the neighboring areas of the trail. The analysis is based on a ¼-mile zone on both sides of the proposed Brickline and estimates an approximate range of annual walking, biking and transit trips.

Two scenarios have been developed to understand the impact and usage of the Brickline, taking into account pandemic-induced variation in traffic data. Active transportation trips are calculated for each scenario and used to estimate a range of annual impacts for each impact category in this section as well as Sections 2.5 to 2.7.

A range of economic impacts are realized as a result of the trips shifting from vehicular to active transportation or public transportation. These include user impacts (e.g., vehicle operating cost and health benefits) and non-user benefits that accrue to society as a whole (e.g., increase in transit revenue, improved road safety and environmental benefits). Savings associated with increased road safety have been calculated using historical accident rates in St. Louis and estimated economic costs of each accident type.¹⁷

In summary, the Brickline will not only provide more transportation choices for those without a vehicle but will also improve the safety around the Brickline corridor and reduce automobile dependency.

The estimated impacts of mode shift are summarized in the figure 9 table adjacent. These impact estimates apply to the period following the completion of the Brickline.

Figure 10: Estimated annual transportation and road safety impacts



Source: EY Analysis based on NHTS, MoDOT and GRG data



Location: Busch Greenway

2.5 Local business spending

A study undertaken in 2019 by Purdue University on the economic impact of trails indicates that trail networks increase tourism spending and local economic activity as people switch from driving to active transportation and transit and spend more money in local business adjacent to trails.^{18 19}

There will be retail and associated spending impacts associated with active transportation (increased bicycle and pedestrian) trips on the Brickline. Some of this spending may be new (e.g., tourism), while other spending may be geographically shifted within St. Louis, driven by a mode shift (e.g., motorists who shift from driving to active trips may undertake spending at retail outlets different than those in their status quo travel scenario). The direct retail spending impact is estimated using the active transportation trips in each scenario (based on the trail demand estimates in Section 2.4), share of trips for shopping/recreational purposes and average spend per trip.

For the purpose of our analysis, a literature review of comparable trails was carried out to estimate the value of retail spending per Brickline trip. This included spending patterns for local as well as non-local travelers. The spends were adjusted to consider the difference in price and income levels of the study area and was compared against the tourism spending data for the St. Louis economy across different categories, such as food and beverage, recreation, shopping and entertainment. Based on these, a retail spending range of \$36-\$50 per user per trail trip is used as an assumption for estimating the local retail activity impact of the Brickline (refer to Appendix 4 for more details).

The total economic impacts were estimated using the IMPLAN input-output model and is the summation of local and tourist spending impact based on low- and high-impact scenarios. The results suggest that the overall retail spending impact related to the trail contributes ranges from \$59 million to \$82 million and supports approximately 653 to 906 jobs per year.



Figure 11: Local business spending impacts





Location: Busch Greenway

2.6 Environment

Decades of focus on single occupant automobile usage can leave residents and visitors with limited transportation options other than driving. As part of the local transportation system, an urban trail network offers safe and efficient transportation alternatives for numerous destinations. The envisioned Brickline would provide a physically separated greenway trail from roadway traffic. It would provide a bicycle and pedestrian facility that would be otherwise unavailable.

Bicycling and walking are modes of transportation that are emission-free, unlike exhaust from gasoline-based vehicles. Environmental benefits from active transportation are further enhanced by considering the synergies with transit use.

The Brickline aims to support specific sustainability initiatives taken up by the City of St. Louis. The City adopted a Sustainability Plan in 2013, which proposes to achieve a “triple bottom line”: a balance of economic health, social equity and environmental stewardship. The Brickline has been identified as a high-priority infrastructure enhancement to support the objectives outlined within the Sustainability Plan. The Brickline will assist in providing safe, accessible and healthy transportation and also aid in reducing greenhouse gases, managing stormwater and encouraging civic engagement.

Savings due to reduction in CO₂ emissions resulting from mode shift toward active transportation are driven by annual vehicular miles traveled (VMT) avoided (estimated in section 2.4). The Brickline is estimated to drive a reduction of up to 5,500 tons of CO₂ annually in the form of vehicular emissions. Taking into account the reduced CO₂ emissions due to tree planting, this is equivalent to removing up to 1,146 vehicles from roadways every year.

In addition to benefits accruing from mode shift, environmental benefits are also gained from the addition of landscaping along the proposed length of the trail. GRG estimates that the proposed trail aims to add approximately 4,400 trees to St. Louis’s already extensive green infrastructure.

Annual air pollution removal, carbon sequestration and carbon storage benefits associated with tree planting have been calculated using the iTree canopy model developed by USDA Forest Service.²⁰ Once the tree planting is fully realized, the environmental benefits would be valued at up to \$5 million over 10 years.

While not quantified in this Report, there are also improvements to water supply/quality, flood mitigation, wildlife preservation, habitat restoration and avoided stormwater infrastructure costs.

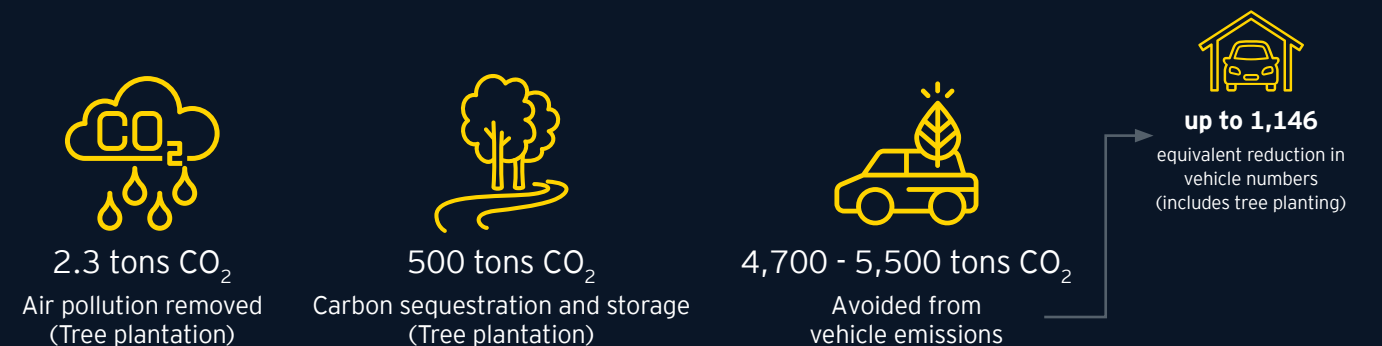


Figure 12: Estimated environmental impacts

Source: iTree

2.7 Health

Greenway networks can contribute to the overall health of residents by offering people attractive, safe, accessible places to bike, walk, hike, jog or skate, providing better opportunities for active lifestyles. The Brickline project area currently lacks a network of protected bicycle facilities. Many sidewalks are in disrepair, of insufficient width, do not meet ADA Standards for Accessible Design compliance, and feature minimal pedestrian markings and signalization at intersections. The Brickline will be a physically separated sidepath, constructed within the existing right-of-way and include amenities such as directional signage, bicycle parking, bike repair stations and art installations. Other bicycle pedestrian amenities include ADA-compliant crossings at intersections, new mid-block crossings, 12-foot sidewalks and a new brick paver median.²¹

Studies show that as the density of public green space increases, resident walking activity increases by 8.6% and the presence of green space is associated with a 41% increase in engaging in regular light physical activity.²² The 2022 Adult Physical Activity data and statistics published by Centers for Disease Control and Prevention (CDC)²³ estimates that approximately 28% of the adult population in St. Louis is physically inactive.²⁴ It indicates that sedentary lifestyles contribute greatly toward increased rates of obesity, diabetes, heart disease, stroke and other chronic health conditions.

The Brickline will inspire more students, workers and recreational users to take more active forms of transportation. This project helps people overcome barriers to active transportation, thus diverting motorists away from vehicles to biking and walking. More people choosing active transportation alternatives will lead to healthier residents and communities.

The expected health benefits associated with the introduction of the Brickline is estimated using the avoided health care costs per user.²⁵ The estimated health benefits associated with the expanded Brickline ranges from \$3 million to \$4 million. These estimates are conservative, as they are inclusive of only the physically inactive adult population. The "insufficiently active" individuals have not been considered for this analysis.²⁶

Alongside public health benefits, evidence suggests physical activity also boosts people's workplace productivity, mental health and overall well-being.²⁷

Figure 13: Estimated health benefits



\$3–\$4 million

User avoided health care costs
(annual)



~ \$1,700

Health care savings per trail user
(annual)



Location: Centennial Greenway

3. Conclusion

The Brickline is an ambitious and inclusive placemaking effort that will connect communities across the St. Louis' metro and redefine what a 21st century greenspace can be.

As has been demonstrated in cities across the country, the transformation of underutilized infrastructure into new urban landscapes and safe routes has led to neighborhood revitalization, job creation and business growth. The Brickline is no exception. The build-out of the Brickline would bring economic benefits to the St. Louis community that would likely far exceed the initial public-private investment of \$245 million. With a new Equity + Economic Impact Director in place (another public-private partnership example between Great Rivers Greenway, St. Louis Development Corporation and private donors, funded at 104% for the next five

years), this process strives to ensure that everyone has the opportunity to thrive and create shared prosperity.

The creation of new walking and biking opportunities and improved access to public transportation will provide new ways to commute to schools, jobs and daily activities; support healthy lifestyles; reduce road congestion; and lower environmental emissions. Socioeconomic benefits include new economic activity in the construction sector, a boost for property values located near the greenway and increased activity for current and future businesses adjacent to the greenway.

The Brickline is a key initiative to building a more equitable transportation system and prosperous regional economy in St. Louis.

Location: Kiener Plaza, Credit: Gateway Arch Park Foundation



Appendix 1: Technical descriptions of data and limitations

Technical details on Report methodology

The estimated economic output, labor income and jobs presented in this Report are based on information regarding the Brickline provided by GRG or estimated by EY US. The economic contributions related to this activity were estimated using IMPLAN input-output modeling for the St. Louis MSA, which describes relationships between businesses, households and governments.

Figure 14: St. Louis MSA
Source: Greater St. Louis, Inc.



This model follows financial flows as purchases of local goods by companies and employees support sales, jobs and labor income. IMPLAN is used by the public sector as well as private-sector businesses and other researchers, and it is based on widely accepted methodology for estimating these types of economic linkages.

The magnitude of each economic effect is described in terms of an economic multiplier. The multipliers in the IMPLAN model are based on the Leontief matrix, which estimates the total economic requirements for every unit of direct output in a given industry using detailed inter-industry relationships documented in the input-output model. The input-output framework connects commodity supply from one industry to commodity demand by another. The multipliers estimated using this approach capture all the backward linkages related to an industry's production by attaching technical coefficients to expenditures. These output coefficients (dollars of demand) are then translated into dollars of economic output, labor income and number of employees based on industry averages. A static input-output model is based on observed historical relationships and, therefore, does not account for supply-side constraints, price changes, labor-capital substitution or other market dynamics.

The three types of effects estimated by the IMPLAN model – direct, indirect and induced effects – describe the nature of the economic “ripple” effects generated by the expenditure.

The sub-state, state and federal tax impacts have been estimated using IMPLAN's Tax Impact Report. The methodology is available here: [Link](#).

Limitations

The reader should be aware of the following limitations and assumptions of this analysis:

- ▶ The potential economic impacts presented in this Report (including employment and labor income) reflect the work location. These are jobs that could be filled by St. Louis MSA residents or nonresidents.
 - ▶ The indirect and induced economic contributions are estimated using a static input-output economic model reflecting historical purchasing relationships.
 - ▶ Indirect economic impacts were estimated based on relationships in the IMPLAN input-output model, which describe the mix of locally supplied goods and services by industry, based on historical purchasing relationships.
- ▶ The IMPLAN industry models were chosen to most closely resemble the mix of activities related to the estimated expenditures.
 - ▶ The economic impacts presented in this Report quantify the economic activity supported by Brickline investments and associated spending. In some cases, the indirect and induced jobs may not be new to St. Louis, but temporarily supported by these expenditures.
 - ▶ There is a lag in dataset year for the tax analysis. The 2019 IMPLAN model used is based on 2018 tax data.



Shady Creek Bridge

Appendix 2: Literature review of residential property values adjacent to trails

Study	Location	Significance	Buffer	Uplift
Property value/desirability effects of bike paths adjacent to residential areas (2006)	New Castle, DE	Bike lanes addressed in this project were for the most part, dedicated paths rather than portions of the public roadway simply striped or designated as a suggested bike way due to extra road width or shoulders.	50 meters	4%
The impact of greenways on property values: evidence from Austin, Texas (2005)	Barton Creek Greenbelt and Wilderness Park in Austin, TX	Large natural area that includes multi-use trails and amenities. Major residential areas that border the greenbelt were examined.	Adjacent	6.3%
The relative impacts of trails and greenbelts on home price (2007)	San Antonio, TX	The study analyses the impact of trail, greenbelt and greenway separately.	Adjacent	5%
Quantifying the impact of completing the east coast greenway in the Delaware River Watershed	East Coast Greenway, DE	The East Coast Greenway links many Delaware River Watershed communities and open spaces together and acts as a centerpiece of the greater regional trail networks. It connects and completes the regional trail network.	0.25 mile	5%
Does converting abandoned railways to greenways impact neighboring housing prices? (2019)	Whittier, CA	The Whittier Greenway Trail is a 4.5-mile commuter and recreational bikeway, pedestrian path and greenbelt. The Greenway passes through residential, commercial, industrial and institutional land uses, connecting the community and allowing people to safely bike or hike through town.	0.25 mile	7%
The impact of trails and greenways on property values (2020)	Multiple	The research methodology used identified 20 studies that investigated the impact of trails on residential property values.	Adjacent	5%

Study	Location	Significance	Buffer	Uplift
The economic impacts of Denver's park and recreation system (2010)	Denver, CO	Using computer-based mapping, all residential properties within 500 feet of every significant park and recreation area in Denver were identified and modeled.	<0.25 (within 500 feet)	15%
The effects of a recreational bike path on housing values in Muskego, Wisconsin (2018)	Muskego, WI	This study examines an exurban community by applying geospatial analysis.	Adjacent	9%
Impact on property values of distance to parks and open spaces: An update of US studies in the new millennium (2020)	33 regions in USA	A review of 33 studies confirmed: House values rose as proximity to a park increased; larger parks had higher premiums, and their influence extended over a longer distance; substantially greater premiums accrued from passive than from active parks.	Up to 500 feet	10%
The impact of trails on property values: a spatial analysis (2017)	Ogden, UT	This study analyzed the impact of trail access on property values in Ogden, Utah using spatial hedonic pricing models.	500-foot buffer	1%
Crompton & Nicholls (2005)	Austin, TX	The study found that neighborhoods with access to and views of the trail command higher property values, which in turn generates additional tax revenue for governments.	0.25 mile	4.4%
McPherson (2018)	Atlanta, GA	The study uses the case of the Atlanta BeltLine and places the findings in context of larger conversations about equitable development and open space.	0.25 mile	25%
Brickline Raise Grant (2021)	St Louis, MO	The Brickline is a major public-private partnership to bring to life a greenway network of up to 20 miles of accessible multi-use pathways where people can walk, run, bike, push a stroller or roll a wheelchair.	0.25 mile	15%

Appendix 3:

Summary of planned or in-progress commercial developments

This table presents a summary of the commercial developments nearby to the Brickline. This is based on interviews with key stakeholders and desktop research. This is not an exhaustive list.

Project (planned or in progress)	Category/zoning	Location/neighborhood	Estimated year of completion	Cost estimate	Area	Description
Project Connect (NGA site relocation)	Commercial	Zip: 63106. *Focused on eight neighborhoods: St. Louis Place, Carr Square, Old North, JeffVanderLou, Columbus Square, Downtown West, Hyde Park and North Riverfront.	2025 (to be operational)	*\$1.7 billion *An additional \$60 million in street improvements near the new National Geospatial-Intelligence Agency site.	97 acres	*An initiative by the City of St. Louis to understand the potential impacts of the relocation of the National Geospatial-Intelligence Agency (NGA) will have on surrounding neighborhoods and future development. It is focused on eight neighborhoods with a goal to identify priority investments that will help keep existing residents and businesses in the area and encourage new growth in the future. *The future NGA site is located in a neighborhood with significant opportunity for new development. The needs of the 3,150 NGA employees entering the neighborhood are complementary to the needs of current residents and businesses. *The new NGA facility will feature a 712,000 sq ft office building with a garage, visitor center and inspection facility. Source: Project Connect Action Plan. Can be accessed here: Link
Expo at Forest Park	Mixed Use (Residential and Retail)	Skinker-DeBaliviere area	2022	\$90 million	457,100 sq ft	*Tegethoff Development, the private developer, plans to bring residential living and new retail to the Skinker-DeBaliviere area, located just north of Forest Park by the mixed-use Expo at Forest Park project. *Expo at Forest Park consists of two separate multifamily buildings: the south building is 284,500 sq ft and eight stories (one below grade) of apartments (184,700 SF) and amenity space, with 5,800 sq ft of retail and a 94,000-SF parking garage. North building is 172,600 sq ft and six stories (one below grade) of 94,000 sq ft of apartments and amenity space, with 24,3000 sq ft of retail and a 54,300-SF parking garage. Source: RE journals Can be accessed here: Link
Missouri Botanical Garden Jack C Taylor Visitor Center	Recreation	Missouri Botanical Garden	2022	\$100 million	90,000 sq ft	*The entire project is three phases and expected to finish in winter 2022. The project aims to transform the services and experiences for visitors to the Missouri Botanical Garden. *The 90,000 sq ft visitor center will feature several new amenities, including the Emerson Conservatory, Sassafras Cafe, a new gift shop, the William T. Kemper Lobby, the Lelia J. and David N. Farr Auditoriumx and the Bayer Event Center. Source: St. Louis Business Journal Can be accessed here: Link
Jefferson Arms	Mixed Use (Residential and Commercial)	Downtown St. Louis	2025	\$104 million	500,000 sq ft	*The project aims to transform the historic Jefferson Arms building in Downtown St. Louis into a vibrant, residential and commercial development. Source: St, Louis Construction News and Review (CNR) Can be accessed here: Link

Appendix 3:

Summary of planned or in-progress commercial developments continued

Project (planned or in progress)	Category/zoning	Location/neighborhood	Estimated year of completion	Cost estimate	Area	Description
Centene Stadium	Recreation and Sports	St. Louis' Downtown West District.	Late summer 2022, host first game in 2023	\$457.8 million	30+ acre site	<p>*This project will be a multi-purpose MLS campus. The campus would include stadium, training facility, locker room, hydrotherapy equipment, practice fields, dining facilities, deluxe film room and headquarters all in the same centralized location.</p> <p>Source: Major League Soccer Can be accessed here: Link</p>
The Edwin Project	Recreation and Sports	Located in the Steelcote Square District in Midtown, within the 400-acre redevelopment area at Grand Boulevard between Gratiot and Papin Streets.	2023	\$60 million	70,000 sq ft	<p>*The Edwin Project is a \$ 60 million development project, which will be developed through a partnership between the Pier Property Group and Fireside Financial. This project is also receiving backing from the city of St. Louis, the Saint Louis University and St. Louis Midtown Redevelopment Corp (SLMRC).</p> <p>*The Edwin Project covers the development of a 70,000 sq ft Target store, along with additional stores, 196 luxury apartments and a garage with a 200-space capacity and 140 surface parking spaces.</p> <p>Source: St. Louis Business Journal Can be accessed here: Link</p>
O'Loughlin Family Champions Center	Sports	St Louis University, North Boulevard	Spring 2023	\$20 million	25,000 sq ft	<p>*Saint Louis University, along with the Department of Athletics, announced the construction of a facility for student athletics. The new facility will have programs in nutrition, wellness and sports psychology.</p> <p>* The facility will be connected to the northwest corner of Chaifetz Arena (sports stadium).</p> <p>Source: St. Louis Today Can be accessed here: Link</p>
Ambulatory Surgery Center, Saint Louis University Hospital campus	Healthcare	Saint Louis University Hospital campus in Midtown.	2023	\$25 million		<p>*The expansion is underway via a partnership between SSM Health SLU Hospital, the St. Louis University School of Medicine and SLUCare Physician Group.</p> <p>Source: St. Louis Business Journal Can be accessed here: Link</p>
Siteman Cancer Center	Healthcare	Forest Park Avenue and Taylor Avenue in the Central West End	2024		659,000 sq ft (medical space and parking garage.)	<p>*The new Ambulatory Cancer Center (ACC) at Forest Park Avenue and Taylor Avenue in the Central West End will emphasize multi-disciplinary care and enhanced connections between research and clinical care. Included in the project are street improvements along Forest Park Avenue, Taylor Avenue and the Forest Park/Taylor intersection to improve traffic flow and patient access to the building.</p> <p>*Connected to the Washington University Medical Campus by a pedestrian link; 430 parking spaces above the main lobby.</p> <p>Source: St. Louis Today Can be accessed here: Link</p>

Appendix 3:

Summary of planned or in-progress commercial developments continued

Project (planned or in progress)	Category/zoning	Location/neighborhood	Estimated year of completion	Cost estimate	Area	Description
Neuroscience research Center	Academics (Healthcare)	4370 Duncan Ave, near Central West End	2023	\$616 million	609,000 sq ft	<p>*One of the largest neuroscience research buildings in the country.</p> <p>*This facility will enable the strategic alignment and co-location of the School of Medicine's nationally-recognized program strengths in neuroscience, neurology and psychiatry through research and its applications to education and clinical practice.</p> <p>*The scope of work includes approximately an 1,850-car parking garage, a pedestrian connection (link) from the existing link endpoint through the St. Louis Children's Hospital garage to this new building. The baseline program will include approximately 900 employees, and once fully built out, will include approximately 1,350 employees.</p> <p>Source: St. Louis Today Can be accessed here: Link</p>
Campus Renewal Project	Healthcare	Washington University, near West End		more than \$1 billion long-term project (10 years)		<p>The improvements due to this project range from the consolidation and expansion of clinical care services to more parking and better traffic flow.</p> <p>Source: Washington University in St. Louis Can be accessed here: Link</p>
BJC Institute of Health Vertical Expansion	Healthcare	Near Forest Park and Central West End	Fall 2024	\$150 million	160,000 sq ft	<p>*Washington University School of Medicine in St. Louis will begin construction in the spring of 2022 on a six-floor expansion on top of the Steven & Susan Lipstein BJC Institute of Health building, which sits at the center of the Medical Campus.</p> <p>Source: Washington University in St. Louis RE journals Can be accessed here: Link</p>
Armory District	Mixed Use (Residential and Commercial)	Near St. Louis University	No specific date	\$47.1 million	250,000 sq ft	<p>*Redevelopment of the historic Armory building, which was once home to the 138th Infantry of the Missouri National Guard, years before hosting tennis championships and concerts. The space will find new life, with 250,000 square feet of creative office space, a restaurant and a greenway path connection.</p> <p>Source: St. Louis Today Can be accessed here: Link</p>
40 Grand	Residential	Armory District (Near St. Louis University)	Early 2024	\$160 million		<p>*It is a twin residential towers project, both of which will stand 14 stories high. The two towers will represent the largest transit-oriented development in the region to date.</p> <p>Source: City Scene STL Can be accessed here: Link</p>
Cortex Strategic Developments	Academic	Cortex, near Central West End and Forest Park Avenue	Next 5 years	NA	NA	<p>*10 additional life science companies, 15 additional national security companies, 15 additional general tech companies, which will create quality jobs. Three buildings in the district will be built or rehabbed.</p> <p>Source: CORTEX Strategic Plan Can be accessed here: Link</p>

Appendix 3:

Summary of planned or in-progress commercial developments continued

Project (planned or in progress)	Category/zoning	Location/neighborhood	Estimated year of completion	Cost estimate	Area	Description
New Waterway at Tower Grove park	Recreation		Spring of 2022	\$2 million		<p>*The \$2 million project will restore/uncover a historic stream, create a natural play area for children and honour the original inhabitants of the land, the Osage Nation.</p> <p>Source: St. Louis Magazine Can be accessed here: Link</p>
City Foundry Phase II	Mixed Use (Residential and Commercial)	Near Forest park avenue and SLU (adjacent neighborhoods: Midtown and central west end)	Early 2024	\$125 million	Approx. 108,000 sq ft	<p>*City Foundry STL project is the transformation of the former Federal-Mogul foundry site into a mixed-use development. Phase I includes a food hall as well as creative office, retail and entertainment space.</p> <p>*Phase II includes include a 272-unit apartment tower, 83,000 sq ft office building, 25,000 square feet of retail space and a 481-car parking garage.</p> <p>Source: St. Louis Business Journal Can be accessed here: Link</p>
Ballpark Phase III	Mixed Use (Residential, office and retail)	Near Busch Stadium (neighborhood: Downtown)	2028 to 2030	Phase 3: Unknown Phase 2: \$260 million	Unknown	<p>*Ballpark Village Phase III project consists of three new high-rise towers in three lots currently being used for parking lots in Downtown St. Louis. The three mixed-use developments will put the finishing touch on Ballpark Village.</p> <p>Source: St. Louis Business Journal Can be accessed here: Link</p>
AHM Group Redevelopments	Mixed Use (Residential, office and retail)	Around Centene Stadium in Downtown West	Unknown	\$200 million	More than 30,000 sq ft of creative office space; 5 residential buildings and parking space	<p>*This is the largest development around Centene Stadium in Downtown West that has been announced.</p> <p>*Current plans call for a series of five investments, with the breakdown of those investments being: redevelopment of 2101-7 Locust into creative office space, redevelopment of the two buildings at 2109-15 Locust, Infill building of 50-65 apartment units at 2125 Locust, Infill building with 100 apartment units and 400-space parking garage on the entire 2100 block of Washington Avenue and a 29-story high-rise at 2011-23 Locust Street with between 270-280 apartments, 350+ parking spaces and retail/restaurant space.</p> <p>Source: City Scene STL Can be accessed here: Link</p>
Powell Hall renovation	Recreation (Education)	Grand Blvd	2025 (tentative)	\$100 million	65,000 sq ft expansion	<p>*The project is aimed at renovating and expanding the historic Grand Center building. The cornerstone of the project is a 65,000 sq ft expansion that includes a new education and learning center, a new lobby and backstage space.</p> <p>Source: St. Louis Today Can be accessed here: Link</p>
Residential infill in Grand Center	Residential	Covenant Blu Grand Center neighborhood, near St. Louis university		\$30 million - \$50 million	27 single family homes and 35 apartments	<p>*A \$30 million housing development. The development will include 27 single-family homes and a building with 35 apartments.</p> <p>Source: St. Louis Public Radio Can be accessed here: Link</p>

Appendix 3:

Summary of planned or in-progress commercial developments continued

Project (planned or in progress)	Category/zoning	Location/neighborhood	Estimated year of completion	Cost estimate	Area	Description
Project Cardinal	Mixed Use (Residential and retail)	Downtown St. Louis	Unknown	\$34 million	3,000 sq ft of retail space	<p>*Project Cardinal is a 148-unit apartment community in St. Louis, including 3,000sf of retail space. The site is located on Spruce Street, between the MLB and NHL stadiums and is two blocks from the live-work-play development, Ballpark Village. The location provides efficient access to major interstates and highways. The project will contain a full amenity offering, including fitness center, club room, outdoor courtyard, grills, firepits, dog wash station, dog run, rentable work from home space and rentable storage.</p> <p>Source: Stonehenge Real Estate Group Consulting Can be accessed here: Link</p>
Historic Butler Brothers building	Mixed Use (Residential and retail)	Downtown St. Louis at 1717 Olive St. between 17th and 18th streets	Unknown	\$130 million	735,000 sq ft	<p>This construction has begun on the \$130 million redevelopment of the historic Butler Brothers building in Downtown West. Memphis, Tennessee-based Development Services Group purchased the 735,000 sq ft, long-vacant building for \$6 million in late 2020, planning to transform it into a mixed-use complex with 384 apartments, coworking offices, and a restaurant and bar space on street level. The building, which spans a full city block at 1717 Olive St. between 17th and 18th streets, previously served as a warehouse in the once-thriving Garment District. The reuse of the building is seen as a signal of a revival of interest in the Downtown West neighborhood centered around the nearby \$461 million Centene Stadium, which the St. Louis City SC Major League Soccer team will start playing in next year. Link</p>



Appendix 4: Literature review on spending adjacent to trails

Study	Location	Significance	Residents/visitors	Average spends adjusted to St. Louis' levels
Examining Consumer Behavior and Travel Choices	Portland, OR	Establishments were sampled from the total number of options in a business type within the entire Portland metro area stratified by a range of urban contexts. Area types included CBD, neighborhoods, regional centers and suburban areas.	Residents	\$25.61
East Village Shoppers study	Manhattan's East Village, NY	Through individual surveys with 420 pedestrians, this study assesses the inclination of residents and visitors to use the recently installed protected bike lanes and select bus service on First and Second avenues and their perception of the bike and bus lanes' impact on the neighborhood. Most customers in the East Village are local.	Residents	\$39.35
Bicyclists as Consumers	Davis, CA	Davis has the highest share in the country of workers who usually commute by bicycle; Population density is relatively uniform, and the city is relatively compact; most residents are within 3 mi of downtown.	Residents	\$72.02
Consumer Behavior and Travel Choices: A Focus on Cyclists and Pedestrians	Marlinton, WV	The Greenbrier River Trail is a 78-mile former railroad now used for hiking, biking and horseback riding. Trail users in West Virginia make valuable contributions to the local economy. With over half of the visitors spending over \$100 per visit and most coming from out-of-state.	Visitors	\$188.87

Consumer Behavior and Travel Choices: A Focus on Cyclists and Pedestrians	Portland, OR	The study shows the link between consumer behavior and the mode of transportation used to access local destinations. This analysis surveys 78 local business in Portland (including convenience stores, bars and restaurants). The findings indicate that customers who arrive by active modes spend similar amounts or more than customers arriving via automobiles. They are also more frequent patrons.	Residents	\$44.13
Missouri State Park Economics and Benefits: An Update Based on 2011 Visitation White Paper Prepared for Missouri Department of Natural Resources Division of State Parks (2012)	MO	Estimates the economic impact of expenditures in Missouri State in the following categories: transportation, gasoline, parking/tolls, lodging, food/beverage/dining, groceries, entertainment, shopping/gifts/souvenirs and other amenities.	All travelers	\$54.63
The Economic Impact of Trails (2019)	Katy Trail, MO	The Katy Trail is a 238-mile trail stretching across most of the state of Missouri and has 400,000 trail users per year. The analysis helps us understand the spending patterns of visitors and locals who use the trail.	Residents	\$12.72
			Visitors	\$34.69

Appendix 4: Literature review on spending adjacent to trails (cont.)

Study	Location	Significance	Residents/visitors	Average spends adjusted to St. Louis' levels
	East Village, NY	On 1st and 2nd Avenues, a survey was conducted to understand the average spent by cyclists on retail.	Residents Cyclists: Pedestrians:	\$21.13 \$20.29
Portland Green Loop Economic Analysis (2016)	Portland, OR	The Portland "Green Loop" is a six-mile linear open space running through the the city, connecting existing and new open spaces, parks, gathering areas and walking and biking pathways. Surveys of customers at restaurants, drinking places, convenience stores and supermarkets was used to understand the relationship between mode share and shopping frequency/spending.	Residents	\$22.59
Protected Bike Lanes Mean Business (2018)	Portland, OR	The study finds that people who arrive at a business on bike spend less per visit but visit more often, resulting in more money spent overall.	Residents	\$12.01
Outdoor Industry Association, (2013)	Across Regions	A 2013 study of 3,133 national participants (distributed across regions) in non-motorized recreational activities estimated participants' spending per trip on trail-based recreational day trips and bicycle related recreational day trips.	All Travelers	\$77.27



Location: Brickline Greenway: Market Street



Location: St. Louis Riverfront, St. Louis MO

Endnotes

¹[Brickline Greenway-High Line Network \(thehighline.org\)](https://thehighline.org)

²[GRG Application RAISE-Grant 2021-07-12.pdf \(greatriversgreenway.org\)](https://greatriversgreenway.org)

³Where the analysis methodology dictates, the results are presented in a range. This table provides the upper bound of each range. The body of the report describes the full range. The economic impacts are not additive and in some cases may double count impacts.

⁴The nine neighborhoods surrounding the Brickline Greenway included for the study are as follows: Central West End, Covenant Blu-Grand Center, Downtown, Downtown West, The Gate District, JeffVanderLou, Midtown, St. Louis Place and Tiffany.

⁵<https://greatriversgreenway.org/benefits-of-greenways>

⁶<https://greatriversgreenway.org/brickline/faqs/>

⁷Economic Impact Assessment has been undertaken for an initial spend of \$245 million spread over 11 years, 2018-2029. This includes \$15 million or \$2.5 million per annum spending on operations and maintenance starting 2024. However, the operations and maintenance spending is expected to be continued post-2029.

⁸St. Louis MSA - Multipliers by IMPLAN sector-2019

⁹Labor Income refers to all forms of employment income, including employee compensation (wages, salaries and benefits) and Proprietor Income

¹⁰'Worker years' denotes jobs lasting one year each. e.g., a four-year construction period, supporting 246 worker years would represent an average of 61 people employed per year.

¹¹[GRG Application RAISE-Grant 2021-07-12.pdf \(greatriversgreenway.org\)](https://greatriversgreenway.org)

¹²ULI Creative Placemaking Brochure (Based on Survey ULI members who are real estate industry leaders, including developers, asset managers and heads of urban development authorities, August 2016); [ULI Creative Placemaking Brochure](#)

¹³The CPPI index for St. Louis includes suburban markets. See map below



¹⁴[GRG_Application_RAISE-Grant_2021-07-12.pdf \(ey.com\)](https://ey.com)

¹⁵National Household Travel Survey, 2017. Can be accessed here: <https://nhts.ornl.gov/>

¹⁶<https://www.modot.org/traffic-volume-maps>

¹⁷Historical accident data has been sourced from Fatality Analysis Reporting System (FARS) by the National Highway Traffic Safety Administration (NHTSA). Value of statistical life was sourced from Guidance on Treatment of the Economic Value of a Statistical Life in U.S. Department of Transportation Analyses (2016).

¹⁸The Economic Impact of Trails (purdue.edu)

¹⁹<https://bikeleague.org/sites/default/files/Bicycling%20Benefits%20Business.pdf>

²⁰i-Tree Canopy v7.0 from the i-Tree software suite by the USDA Forest Service. Can be accessed here: <https://canopy.itreetools.org/>

²¹Brickline Raise Grant 2021

²²Brickline Raise Grant 2021

²³Adult Physical Inactivity Prevalence Maps by Race/Ethnicity | Physical Activity | CDC

²⁴Physical inactivity is defined as percentage of adults age 20 reporting no leisure-time physical activity. Insufficiently active means some reported physical activity, but not enough to meet CDC guidelines of 150 minutes of physical activity per week.

²⁵Carlson, Susan A. et al. Inadequate physical activity and health care expenditures in the United States. Progress in cardiovascular diseases, 2015.

²⁶Levels of physical activity: 1) Inactive: not getting any moderate- or vigorous intensity physical activity beyond basic movement from daily life activities; 2) Insufficiently active: doing some moderate- or vigorous-intensity physical activity but less than 150 minutes of moderate-intensity physical activity a week or 75 minutes of vigorous-intensity physical activity or the equivalent combination. This level is less than the target range for meeting the key guidelines for adults; 3) Active: doing the equivalent of 150 minutes to 300 minutes of moderate-intensity physical activity a week. This level meets the key guideline target range for adults.

²⁷[Why Bikes are Good for Business" \(Michigan Complete Streets Coalition, 2014\)](#)

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