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Economic and Financial Analysis of Complete Streets in Billings, MT

Final Report

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BILLINGS - YELLOWSTONE COUNTY MPO METROPOLITAN PLANNING ORGANIZATION

camecon.com

Authors

Ann Ormsbee, Cambridge Econometrics – ao@camecon.com

Dan Hodge, Cambridge Econometrics – dh@camecon.com

Rachel Grosso, Kittelson & Associates, Inc. - rgrosso@kittelson.com

Justin Delgado, Kittelson & Associates, Inc. - jdelgado@kittelson.com

Project Director

Dan Hodge, Cambridge Econometrics – dh@camecon.com

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Executive Summary

Complete Streets investments are designed to create safer, more accessible roadways for all users, including pedestrians, cyclists, transit riders, and drivers, while also supporting broader community and economic goals. This type of investment includes a wide range of improvements, including sidewalk expansions, bike lanes or multi-use trails, high-visibility crosswalks, pedestrian refuge islands, curb extensions, transit shelters, and streetscape enhancements. **The City of Billings, Montana has been a long-time leader in implementing Complete Streets improvements, recognizing their potential to enhance quality of life, strengthen economic vitality, and improve connectivity across the community.** This report evaluates the economic, financial, and social impacts of these investments through a data-driven analysis of four representative corridors:

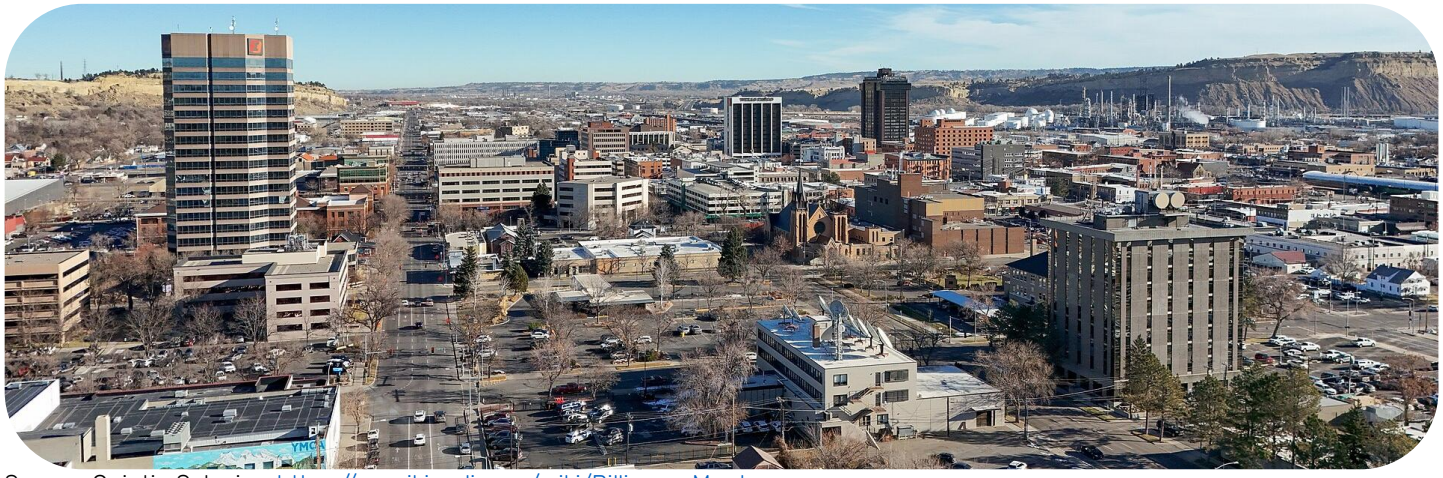
- North 30th Street
- Shiloh Road
- Grand Avenue & 54th Street West
- Lake Elmo Drive.

Using a difference-in-differences analytical framework (first difference: before and after Complete Streets project; second difference: performance against a comparison area) where data are available, the study compares conditions before and after project implementation and against similar corridors without comparable investments. **A range of indicators were assessed, including property values, building permits, business licenses, visitor activity, and safety.** Quality of life and emissions reduction improvements are discussed qualitatively and represent additional value for the Billings community. Lastly, stakeholder input from local organizations further complements the quantitative analysis, providing insight into how these investments are experienced across Billings.

Overall, findings indicate that Complete Streets investments are associated with positive economic and community outcomes. Property values increased in three of the four case study areas, particularly along commercial corridors, suggesting that improved accessibility and streetscape enhancements make these areas more desirable for investment. Business activity, as measured by business licenses, also showed strong positive trends in most corridors, supporting the link between multimodal accessibility and commercial vitality. While data for building permits and visitors were more limited, available evidence suggests these indicators may also respond positively over time.

Results related to safety were inconclusive due to data limitations and confounding factors. However, the analysis demonstrates clear improvements in pedestrian and bicycle level of service and highlights the potential for greater safety benefits when Complete Streets investments are paired with targeted safety interventions.

While individual metrics may be influenced by data constraints or external factors, consistent patterns across multiple indicators and corridors provide strong evidence that Complete Streets investments are contributing to positive change in Billings. Importantly, these benefits often extend beyond the immediate corridor, reinforcing broader community development goals.



Source: Quintin Soloviev. https://en.wikipedia.org/wiki/Billings,_Montana.

There have been expressed concerns that Complete Streets investments are not an effective use of public funds. This analysis demonstrates that, in certain cases, **property tax revenue gains often outweigh the costs of construction and maintenance within a few years.** Taken together, this study demonstrates that **Complete Streets investments are an effective strategy for supporting economic development, improving quality of life, and creating a more connected and resilient community**. Continued investment will further expand these benefits as Billings becomes increasingly safe, accessible, and vibrant.

As Billings continues to grow, expanding and better connecting the existing transportation network for all users will be critical to maximizing the economic and community benefits. Addressing remaining gaps, particularly in areas with limited multimodal access, and strengthening integration with key destinations such as commercial centers will enhance safety, accessibility, and economic outcomes.

This study includes detailed economic and technical analysis of the four Complete Streets case studies. These details and methods can be found in Chapters 2 through 5 of the report. For a high-level summary of the key findings, see Chapter 7.

1 Overview and Introduction

Complete Streets investments can benefit residents and businesses in many ways. The connectivity afforded by multimodal transportation networks means that more people can access jobs, commercial centers, and services safely and efficiently, whether they travel by foot, bike, transit, or car. Improved accessibility and streetscape enhancements often make corridors more attractive places to live, work, and invest, which can strengthen property values and encourage private development. As activity increases, businesses may see higher foot traffic and sales, creating demand for additional storefronts and services. Over time, these changes can translate into more building investments, new business formation, and job growth along the corridor and in surrounding neighborhoods.

The City of Billings, MT has been a strong proponent of Compete Streets investments for many years, recognizing that designing transportation corridors to be safe and accessible for pedestrians, cyclists, public transit users, and drivers strengthens both the local economy and overall community well-being.

After decades of implementing Complete Streets improvements, the City now seeks to better understand how these investments have affected safety, accessibility, and economic development. This report presents an evidence-based analysis of the economic, financial, and social returns generated by Complete Streets projects in Billings. By combining rigorous data analysis with local priorities and stakeholder perspectives, the report offers insights to inform future policy and investment decisions that support safety, accessibility, and long-term economic vitality.

To assess the economic and social benefits of Complete Streets investments, this study assesses four case studies across Billings:

- North 30th Street, which added striped bike lanes in Downtown Billings in 2011
- Shiloh Road in western Billings, where a multi-use trail completed in 2010 provides multimodal access along the length of the corridor
- Grand Avenue and 54th Street West, where a multi-use trail was completed in 2018
- Lake Elmo Drive in the Heights, where striped bike lanes were added to the roadway in 2020

When sufficient data were available, this study evaluated economic and safety indicators using a difference-in-differences type analysis, comparing both: 1) before and after impacts (first difference), and 2) economic conditions at the investment site with those in comparison geographies (second difference). This approach accounts for changes over time as well as relative impacts compared to other areas, allowing for overall impacts to be observed.

1.1. Billings Complete Streets Policy

Billings Complete Streets Policy was first passed in 2011. In 2016, a checklist was added to the policy. The policy states that "*the City of Billings shall consider every Street Project an opportunity to incorporate the principles of Complete Streets*" but it does not prescribe a specific treatment to be applied on every street. However, the policy requires the Public Works Engineering Division to present all collector and arterial construction and reconstruction projects to the City Council at 30% design, providing an opportunity for the City Council and public to comment on the design.

There is no specific cross-section for a Complete Street and there is no requirement in the Complete Streets policy to include a bike lane on every street, nor is this an expectation. Engineers consider recommendations from existing plans as well as various context-sensitive elements such as speeds, volumes, surrounding land uses, whether the road is a safe route to school, the project budget, and more. With all these considerations in mind, they develop a preferred alternative for the route that balances the needs of all road users. In recent years, the most common way of accommodating all road users on arterial roads is to include a multi-use trail on one side of the road and a sidewalk on the other side. Recent public outreach though the Engineering Division's Corridor Analysis has demonstrated that the public largely supports this configuration.

The flexible, context sensitive Complete Streets policy ensures that the question '*how are we including all road users on this project?*' is asked rather than requiring a blanket design across the City of Billings.

2 Data and Methodology

2.1. Data

This economic analysis considers a variety of indicators to assess the impact of Complete Streets investment in Billings. These indicators aim to capture a wide range of pathways for potential economic benefits, including real estate, visitation, and business activity. The following economic data are assessed:

- **Property Values:** Complete Streets investments can make corridors more desirable locations to live or open a business, in turn increasing real estate demand and private investments, and pushing property values up. To analyze property value impacts, assessor's data was provided by the City of Billings.
- **Building Permits:** While not as strong of an indicator, information on building permits pulled provides a proxy for investment activity in an area. For more recent case study projects, these data reflect the value of the permit. For older projects, building permit value data were not available and the analysis relies on the number of permits. These data were also provided by the City of Billings.
- **Visitors:** Complete Streets investment can make corridors easier to access and more comfortable to navigate, attracting more trips to the area. Proprietary data from Replica are used to assess visitor impacts, including the overall number of visitors as well as visitor mode of travel (e.g., bike, auto, walk, etc.). Replica publishes results of the model runs in the spring and fall, with separate results for a typical Thursday and a typical Saturday for each period. Replica is a widely used third-party mobility analytics platform that collects various data, like transportation patterns, to create a simulated model of all trips taken by both residents and visitors. For more information see: www.replicahq.com/platform. Because this data is a simulated model, rather than an actual count, the data may be less reliable, particularly for smaller areas or corridors. Further, these are not available prior to 2019, making a before/after analysis impossible in most cases since three of the four case studies were completed before 2019.
- **Business Licenses:** The number of active business licenses illustrates the commercial vibrancy of a corridor. By attracting more visitors and increasing accessibility, Complete Streets investments can lead to meaningful impacts on the number of businesses (retention and startups). To assess these potential impacts, the City of Billings provided detailed data on business licenses.

Together, these concepts help tell the story of some of the ways Complete Streets can impact a local economy. In addition, this analysis evaluates other community benefits, including safety and multimodal traffic impacts, using the following data sources:

- **Safety:** To understand roadway safety, crash data was received from the Montana Department of Transportation (MDT). Annual Average Daily Traffic (AADT) volumes were collected from MDTs online traffic count database. And the statistical societal costs of a crash, known as "KABCO values", were derived from USDOT's Benefit Cost Analysis Guidance. Crash Modification Factors (CMFs) were retrieved from the Federal Highway Administrations (FHWA) CMF Clearinghouse. Together, these data sources quantify the societal cost of roadway crashes, as well as the anticipated impact of certain roadway safety treatments for addressing and preventing those crashes.
- **Multimodal Service**: To understand the "Level of Service", or the perception of ease and efficiency of travel, methodology and an excel workbook sourced from the Oregon Department of Transportation were used in

this analysis to evaluate conditions for people walking, biking, riding transit, and driving. Roadway, pedestrian, and bicyclist infrastructure were sourced from satellite or street view imagery, and traffic volumes were collected from MDTs online traffic count database to inform this analysis.

Two other impact pathways are discussed qualitatively because sufficient data were not available to support an empirical analysis: quality of life and environmental/emission impacts.

Lastly, community impacts are evaluated through stakeholder outreach with six representatives from local organizations who provided valuable input on how Complete Streets investments impact the people and organizations they serve:

- Downtown Billings Association
- Living Independently for Today & Tomorrow (LIFTT)
- Big Sky Economic Development
- Billings Chamber of Commerce
- Shiloh Commons
- Intermountain Health

2.2. Methodology

Economic Analysis

When sufficient data sources are available, economic indicators, such as property values, building permits, visitors, and business licenses, are evaluated using a difference-in-differences framework, which isolates the effects of Complete Streets investments by examining two key comparisons. First, outcomes in the project area are measured before and after the implementation of the Complete Streets improvements (the "first difference"), capturing how conditions change over time. However, because broader economic trends, such as regional growth, inflation, or seasonal variation, can also influence these outcomes, a second comparison is introduced. This "second difference" compares changes observed in the project area to those in carefully selected comparison geographies that did not receive similar investments during the same period.

By combining these two comparisons, the difference-in-differences approach helps control for external factors that affect all areas similarly, allowing the analysis to better isolate the portion of change that is plausibly attributable to the Complete Streets investment itself. For example, if both the project corridor and comparison areas experience increases in business activity, but the increase is significantly larger in the project area following the intervention, the additional growth can be interpreted as evidence of a positive project impact. Conversely, if trends in the project area closely mirror those in the comparison geographies, this suggests that observed changes are more likely driven by broader economic conditions rather than the investment.

In practice, this method strengthens the credibility of the findings by grounding conclusions in relative, rather than absolute, change. It also allows for a more nuanced interpretation of impacts across different indicators, such as business activity or property values, while acknowledging that not all observed changes can be directly attributed to the project. For more information about the limitations of this methodology and how to interpret results, see the Interpretation of Results section below.

Selection of Study and Comparison Areas

While the City of Billings has made substantial investments in Complete Streets improvements across a wide range of corridors, this analysis focuses on four representative case studies. These case studies were selected in partnership with the Billings Metropolitan Planning Organization (MPO) based on the criteria and guidelines outlined below.

Selection Criteria

The following criteria were used to identify projects suitable for inclusion in the analysis:

- **Sufficient data availability:** Projects must have reliable data for both pre- and post-construction periods, allowing for a clear assessment of change over time. Projects completed too recently to observe "after" effects were excluded.
- **Level of investment:** Projects must represent a substantial Complete Streets investment, including improvements such as pedestrian infrastructure, bicycle facilities, streetscape enhancements, or roadway redesign.
- **Project completion clarity:** The timing and scope of construction must be well-defined to support accurate before-and-after comparisons.

Guidelines and Preferred Characteristics

In addition to the core criteria, the following guidelines were used to ensure the case studies collectively provide a balanced and informative analysis:

- **Mix of land uses:** Selected corridors reflect a range of contexts, including both commercial and residential areas, as well as downtown and more suburban areas, to capture how impacts may vary by setting.
- **Geographic diversity:** Projects are distributed across different parts of the city to avoid overrepresenting a single neighborhood or corridor type.

Together, these criteria and guidelines ensure that the selected case studies not only meet minimum data and project thresholds, but also provide a well-rounded basis for drawing broader conclusions about the impacts of Complete Streets investments in Billings.

Once the study areas were defined, suitable comparison areas were identified for the place-based comparison (i.e., the "second difference"). For example, this analysis considers study corridor performance relative to the entire City of Billings to observe if the project area outperformed the city overall. In addition, other nearby street corridors that did not receive a similar level of Complete Streets investment were carefully selected as comparison or control areas. Selecting the right comparison area is a key element of this analysis. Comparison areas should be similar to the study area based on some core characteristics, including:

- Corridor size / length
- Mix and density of commercial and residential uses
- Economic development trends prior to the project implementation year
- Traffic flows and connectivity

The comparison area serves as a control that helps demonstrate the counterfactual economic performance, or put simply, how the study area corridor might have performed if it had not experienced Complete Streets improvements. This analysis approach demonstrates if the study area outperformed the comparison area and/or the city overall, in terms of real estate values, businesses, and other metrics.

Even in Billings, a city experiencing rapid growth and known for making significant investments in active transportation networks, the pool of suitable study and comparison corridors was limited once these constraints were applied. The City does not build any streets without any Complete Streets elements, such as sidewalks, which are included on all City roadways. Almost all streets also include standard crosswalks at some intersection locations, making a true "control" without any Complete Streets elements impossible to find, and potentially leading to an underestimate of Complete Streets impacts. Another key challenge in assessing economic impacts of Complete Streets in Billings is that these investments often coincide with broader roadway construction or improvements, making it difficult to distinguish the source of the benefits. More recent projects are also completed in growing areas of town, where Complete Streets standards are more universally applied, making it harder to find controls in similarly growing areas of town. At the same time, these examples demonstrate the economic benefits of constructing roads conducive to multiple travel modes.

No study or comparison area is a perfect match, and all corridors are subject to some degree of confounding influence. However, by examining patterns across multiple indicators and synthesizing findings from several case studies, consistent and credible conclusions can be drawn. These results are best understood collectively, rather than as precise, standalone estimates for any single corridor (see further discussion below on interpreting results).

Safety and Multimodal Level of Service Impact Analysis

The following subsections provide a brief overview of the methodology employed for assessing safety and multimodal level of service at the four case studies.

Safety

Similar to the methodology used for the economic analysis, difference-in-differences type analysis was employed where possible to assess impacts to safety. Crash data for the pre-project and post-project periods was collected, as available, from the Montana Department of Transportation. The crashes associated with each case study for both the pre-project and post-project periods were summarized by severity, which is a measure of the injury level associated with the crash. Typically, crash severity includes the following categories: fatal crashes (K), serious injury crashes (A), minor injury crashes (B), possible injury crashes (C), and property damage crashes (O). The US Department of Transportation (USDOT) enumerates the societal cost of each type of crash. These "KABCO values" were applied to calculate the total societal crash costs associated with each case study, based on the number of years of data available for each location. The KABCO values calculated on a "per-year" basis were normalized based on the average annual daily traffic (AADT) values of the roadway to provide a consistent comparison metric. In cases where sufficient data were not available for a corridor or pair of study and comparison corridors, either assumptions were made to complete the analysis, or the case study was excluded from analysis of that metric.

Additionally, the impact that Complete Streets project elements may have on roadway safety was calculated and compared against the actual post-project crash outcomes. This projection is calculated using a crash modification factor (CMF) which estimates a percentage reduction in a specific type of crash based on the treatment applied. For example, a CMF for "bicycle lanes" could be used to calculate the expected reduction in vehicle-bicycle crashes that would occur on a roadway following the installation of a bicycle lane. CMFs are typically specific to certain conditions or crash characteristics, such as the type, severity, light condition, weather, and/or intersection vs roadway, etc. The specificity of CMFs limits their applicability to all safety conditions present in a case study corridor. In this study, there were multiple segments of the case studies where the only Complete Streets project element was associated with a CMF that was limited in the scope of its analysis, and as such the project element would have no "expected" reduction in crashes in the post-project period. Where this is the case, the safety analysis was not completed.

Multimodal Level of Service

Pedestrian level of service and bicycle level of service was assessed using the Oregon Department of Transportation's "Simplified MMLOS Calculator". This multimodal level of service (MMLOS) tool applies the Highway Capacity Manual methodology based on several inputs for each mode. For the pedestrian assessment, the number of directional vehicle through lanes, sidewalk width, vehicular speed limit, and roadway directional vehicular volume were included. For the bicycle assessment, the number of directional through vehicle lanes, bike lane presence, vehicular speed limit, and unsignalized conflicts were included. This simple tool is designed to provide a high-level assessment of the ease and efficiency for travel by walking and biking along a corridor; as such, it does not capture the nuance of comfort that are associated with different types of facilities (e.g., an on-street bike lane versus a multi-use trail).

Construction and Maintenance Costs

To contextualize the Complete Streets costs in comparison to the calculated benefits, the City provided construction and maintenance cost estimates for each of the case study corridors and comparison areas.

Construction costs include all costs associated with the initial construction or major upgrade (e.g., Completed Streets investment) to a corridor. Staff from the Billings MPO collaborated with Engineering staff to calculate the project costs for the four case study areas, seeking to isolate the costs directly related to the

Complete Streets components of the roadway improvements. However, estimating the construction costs related to Complete Streets is complicated by the large overlap between improvements associated with vehicle traffic and those specific to bikes, pedestrians, and other users. In bid tabulations and pay applications, costs of both Complete Streets elements and vehicular elements are often intermixed. For example, asphalt may be listed as one cost category when that asphalt was used to construct both motor vehicle lanes as well as bike lanes.

Additionally, assigning costs to Complete Streets elements often requires subjective judgment, particularly when improvements serve multiple functions. For example, if a roadway is widened to accommodate a new bike lane, it is unclear whether the aggregate added to the roadway should be attributed to the bike lane or to general roadway maintenance. As a result, while staff made every effort to isolate and calculate the costs associated with Complete Streets elements in these projects, the figures shown in Table 2.2.1 should be considered estimates.

Table 2.2.1 Construction Cost Estimates for the Case Study Corridors

Corridor	Total Project Construction Cost ($2025)	Complete Streets Construction Costs ($2025)	Complete Streets Construction Costs Per Lineal Foot ($2025)
N. 30th St. from Grandview Blvd. to Montana Ave.	$26,000	$26,000	$5
Shiloh Road from Broadwater to Hesper	$14,885,000	$1,871,100	$344
Grand Ave. from 52nd St. W to Wilderness Dr and 54th to Rimrock	$3,428,900	$461,700	$73
Lake Elmo Dr. from Wicks Ln. to Robertson Rd.	$140,600	$31,700	$6

Note: All values are converted into 2025 dollars using the CPI.

As shown in the Table 2.2.1, the four case studies represent a broad spectrum of construction costs both in terms of the total and per lineal foot. The projects at North 30th Street and Lake Elmo Drive involved only the addition of striped bike lanes on existing roadways, making them significantly less expensive than the other case studies. These projects were recipients of “free” asphalt, because the asphalt already existed on the roadway and was just reallocated to the bike lane with striping and bike lane symbols. On both North 30th Street and Lake Elmo Drive, existing motor vehicle lanes were simply narrowed to allow space for the added bike lanes. As a result, no motor vehicle lanes were removed. Instead, the pavement was simply used more efficiently by allowing additional traffic modes to have dedicated space. However, if more asphalt had to be added for the bike lanes, it would be more expensive to construct the bike lanes than the multi-use trails. Asphalt for bike lanes must be thicker than that for trails because it is on the roadway and engineers plan for motor vehicles to drive over it. Heavier vehicles mean more wear and tear, which means a thicker cross section is needed to withstand the additional weight. Furthermore, if the road already has curb and gutter which must be moved to add in the bike lanes, that will add another significant cost.

In contrast, the Grand Avenue and Shiloh Road projects included the installation of multi-use trails and crosswalks along extended sections of major roadways, resulting in higher costs. As demonstrated with these two corridors, even among projects that include multi-use trails, costs can vary widely. The Shiloh Road project included many pedestrian refuge islands due to the roundabouts, which increases the Complete Streets cost. The corridor also included a sidewalk on the opposite side of the street, in addition to the multi-use trail. Alternatively, the multi-use trail on Grand Avenue and on 54th Street includes fewer pedestrian crossings and only built a multi-use trail, without sidewalks on the other side. Including projects with a range of features and costs highlights the diversity of Complete Streets improvements and investment levels.

Like construction estimates, **maintenance costs** are not readily available and require some calculation. In general, vehicular maintenance costs generally include the following:

- Snow removal
- Sweeping
- Lane line repainting
- Long-term pavement preservation maintenance

Alternatively, Complete Streets maintenance costs include the following:[1]

- Repainting crosswalks
- Sweeping multi-use trails and bike lanes
- Pedestrian Activated Push Button (RRFB) maintenance
- Spraying pedestrian refuge islands with water twice per year
- Snow plowing of multi-use trails and bike lanes
- Mowing/weeding near multi-use trails
- Spraying for weeds near multi-use trails
- Generic trail maintenance
- Line and symbol repainting for bike lanes
- Long-term pavement preservation maintenance

For each cost category, the estimate includes both staff time and the cost of equipment time using the *FEMA 2025 Schedule of Equipment Rates*. Line and symbol repainting were estimated as a single cost by Street and Traffic staff.

As with construction costs, it is not possible to calculate an exact cost for maintenance activities, so the numbers should be considered estimates. MPO staff worked closely with Street and Traffic staff over several sessions to develop a method to determine maintenance costs for both Complete Streets and vehicular elements. There are a variety of staff at different pay rates performing various maintenance activities with

[1] For a full list of activities to maintain various street elements, see the appendix.

various equipment and supplies. Additionally, elements like snow plowing are grouped together for both vehicular lanes and non-motorized facilities in the record keeping system, so it was necessary to estimate the relative efforts assigned to each type of element.[2]

One element that has been included, but should also be considered an estimate, is long-term maintenance. Because of limited funds, long-term maintenance has been performed on a less-than-best practice basis both for Complete Streets elements and for motor vehicle lanes. 2026 marks the first time a long-term preservation technique will be applied to multi-use trails under the City of Billings. The multi-use trail on Shiloh Rd. is one of the trails getting a slurry and crack seal, approximately 16 years after it was constructed. As a result, this slurry and crack seal has been used as the basis, and frequency, for long-term repair of trails. The cost for long-term repairs for the busiest motor vehicle lanes has been calculated using an average cost of all types of repairs used across the City. This average cost was calculated by the City Engineering Division. Engineers use a variety of techniques, from chip sealing to full mill and overlay to repair roads in Billings. It is difficult to determine ahead of time which road will need which treatment, except that busier roads typically get more intensive treatments. The average road repair cost used for this analysis is likely less than it would cost for a full mill and overlay on these roads. More residential streets may only get a chip seal to save money.

For the purposes of determining long-term repair, parts of North 32nd Street, and all of Lake Elmo Drive and Babcock Boulevard assumed an estimate based on chip sealing. Shiloh Road had a specific cost estimate for repair calculated by City Engineers as the Montana Department of Transportation is conducting the work in the next year or two. All other roads used the generic cost for the average cost of road repair, which likely is an underestimate in some cases and an overestimate in others. Given the fact that motor vehicle lanes are much wider, more numerous, and need to be constructed to hold heavier vehicles, the cost to perform long-term maintenance on motor vehicle lanes is higher than that to repave multi-use trails. Bike lanes receive the same type of repair as the rest of the roadway on which they are located.

The tables below show the maintenance cost estimates for each street corridor. Costs have been grouped into broad categories for ease of reading. Further details on the maintenance cost categories, as well as the motor vehicle maintenance elements, are available in the appendix. Costs vary widely across corridors based on the varying elements present and how often they are maintained. For example, crosswalks on Safe Routes to School routes or in high pedestrian traffic areas are repainted yearly, while those on other routes are repainted less frequently.

Shiloh Road is maintained differently than many other roadways. Because of the high volume of traffic, the City contracts repainting of crosswalks and symbols to a contractor who can implement them with more durable materials. As a result, the up-front cost is higher, but it is not necessary to repaint every year. However, it was not possible to estimate the cost of repainting crosswalks with the bid tabulation, as once again, everything was grouped into large categories. As a result, the maintenance for Shiloh Road has been estimated to be the same as the other roadways and assumes the work is done by Street and Traffic Staff and that the crosswalks are repainted every year.

[2] During one of these conversations, Street and Traffic Superintendent Derick Miller commented that on-street bike lanes are maintained at a higher level than multi-use trails; however, this is because they are maintained with the rest of the street rather than a specific focus on bike lanes. For example, snow may be removed from bike lanes more frequently than multi-use trails because the snowplow is already on-site removing snow in the motor vehicle and parking lanes and the bike lane is often located between the two. Even if the bike lane weren't there, this snow would still be removed.

Table 2.2.2 Maintenance Cost Estimates at North 30th Street and Comparison Area

N. 30th St. from Grandview to Montana (~3,183 linear ft of bike lane and 6,178 linear ft of roadway)	
Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$7,700
Bike Lane (Sweeping, snow removal, bike lane restriping, bike lane symbol painting)	$2,400
Street Repair for Bike Lane	$2,500
Total	**$12,500**
N. 32nd St. from Parkhill to Montana (Approximately 4,940 linear ft)	
Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$6,300
Total	**$6,300**

Note: Values may not exactly sum to totals due to rounding.
Usual bike lane repairs include damage from vehicles traversing bike lane and weather.

Table 2.2.3 Maintenance Cost Estimates at Shiloh Road and Comparison Area

Shiloh Rd. – Broadwater Ave. to Hesper Dr. (~13,076 lineal ft)	
Activity/Item	Estimated Annual Cost
Pedestrian Refuge Islands	$300
Crosswalk Repainting	$8,700
Multi-Use Trail (Sweeping, snow removal, mowing/weeding, spraying for weeds, generic trail maintenance)	$4,400
Slurry Seal	$2,900
Total	**$16,300**
24th St. W. – Central Ave. to King Ave. (~5,438 lineal ft)	
Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$3,200
Total	**$3,200**

Table 2.2.4 Maintenance Cost Estimates at Grand Avenue & 54th Street West and Comparison Area

Grand Ave. from 52nd to Wilderness and 54th from Grand to Rimrock (~8,758 lineal ft)	
Activity/Item	Estimated Annual Cost
RRFBs (Pedestrian Activated Flashing Light at Crossing)	$800
Crosswalk Repainting	$3,500
Multi-Use Trail (Sweeping, snow removal, mowing/weeding, spraying for weeds, generic trail maintenance)	$4,000
Slurry Seal	$1,900
Total	**$10,300**
Grand Ave. from 24th St. W to 32nd St. W (~ 6,290 lineal ft)	
Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$2,600
Total	**$2,600**

Note: Values may not exactly sum to totals due to rounding.

Table 2.2.5 Maintenance Cost Estimates at Lake Elmo Drive and Comparison Area

Lake Elmo Dr. from Wicks Ln. to Robertson Rd. (~ 4,382 linear ft)	
Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$500
Bike Lane (Sweeping, snow removal, bike lane restriping, bike lane symbol painting)	$2,900
Chip Seal for Bike Lanes	$1,300
Total	**$4,700**
Babcock Blvd. from Governors Blvd. to Wicks Ln. (~4,904 linear ft)	
Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$800
Total	**$800**

Usual bike lane repairs include damage from vehicles traversing bike lane and weather.

Interpretation of Results

Evaluating the economic and social impacts of Complete Streets investments in Billings presents several limitations that should be considered when interpreting results:

- **Data availability and timing constraints:** Ideal indicators such as business sales and employment at the corridor level were not available, while other datasets lacked detail (e.g., the project team was only able to obtain project values for some of the building permit data). In other cases, such as the visitor analysis, historical data did not extend far enough to establish a "before" period. For more recent projects, the "after" impacts may still be unfolding, and the study period may be too short to fully capture the longer-term or lagged effects that may take years to materialize. Similarly for social analyses, some crash data was not available in pre-project years due to MDT's data storage dating to 2010. Usually, four to six years of crash data are preferred for any project analysis period as crash types and severities vary considerably year-to-year. Additionally, pedestrian and bicycle volumes were not consistently available for case study locations

in the pre-project and post-project periods, which limits or prevents the completion of difference-in-differences type analysis for metrics like quality of life.

- **Comparison area limitations:** The true counterfactual, what would have happened in the study area corridor if the Complete Streets investment did not happen, cannot be observed, making difference-in-differences estimates inherently imperfect. While comparison areas were carefully selected, those corridors may still experience unrelated changes and introduce confounding factors. Further, few roadways in Billings are entirely without Complete Streets elements. As a result, the comparison areas may also benefit from some level of Complete Streets infrastructure, which could dampen the observed differences and make the impacts in the case study corridors appear smaller by comparison.
- **Spillover effects:** Benefits (or impacts) may extend beyond the defined study corridor into nearby areas, which can dilute measured effects within the study area or contaminate comparison areas.
- **Selection bias in project locations:** Complete Streets projects are sometimes implemented in areas already targeted for investment or revitalization or positioned for growth, which can make it difficult to separate cause (the project) from pre-existing trends.

Given these challenges, the results of a difference-in-differences analysis are best interpreted collectively rather than in isolation. Individual numerical estimates may be sensitive to data limitations, external factors, and short-term variability. However, the strength of this analysis lies not in any single metric, but in the consistency of patterns observed across multiple indicators and locations. By examining trends in real estate, business activity, and corridor use across several case study areas throughout the city, the analysis builds a more reliable and comprehensive picture of change.

When similar directional shifts are observed repeatedly across different datasets, geographies, and time periods, it becomes increasingly unlikely that those patterns are driven solely by chance or isolated external factors. Instead, the convergence of evidence provides a strong basis for drawing meaningful conclusions about the relationship between Complete Streets investments and economic outcomes. While the analysis may not precisely quantify the exact magnitude of impact for any single corridor, it can credibly identify impacts and associations. Taken together, the findings offer a well-supported indication that these investments are contributing to positive economic and activity-related changes in Billings.

3 Complete Streets Case Studies in Billings

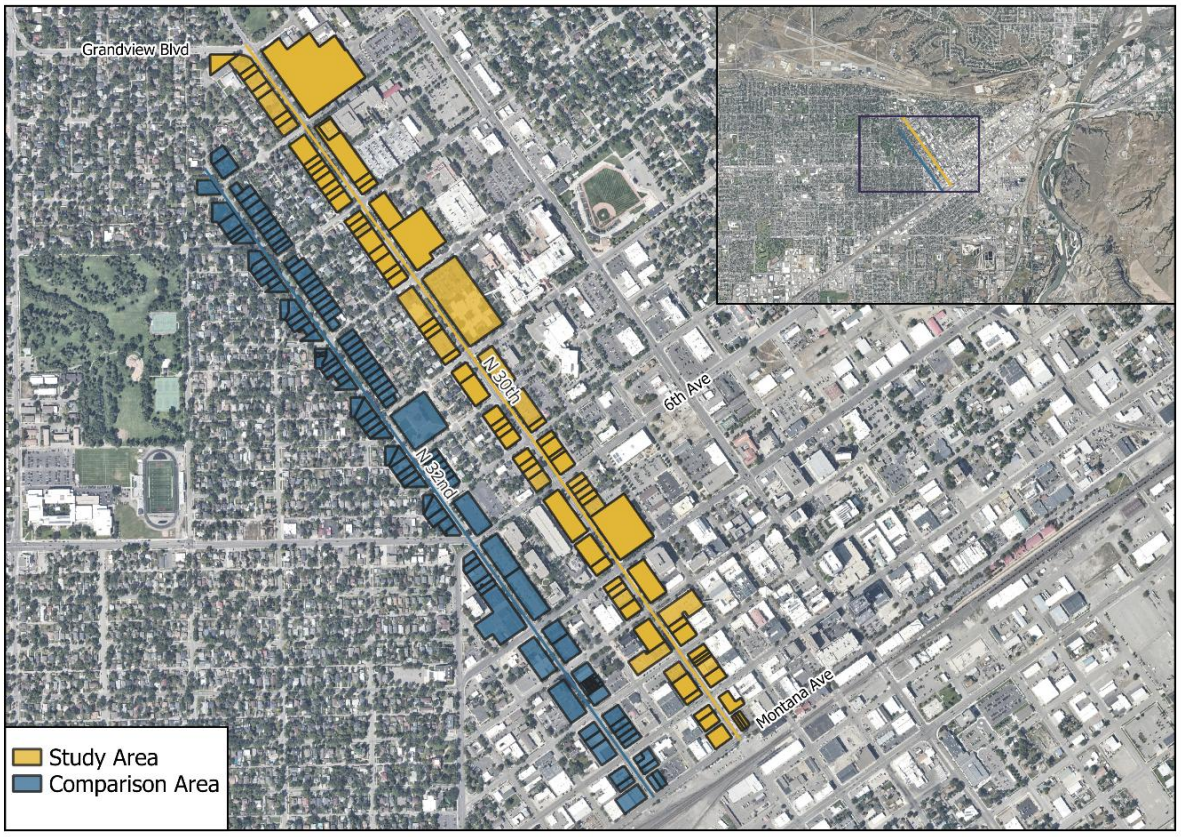
This analysis focuses on four street corridors in Billings that underwent Complete Streets investment: North 30th Street, Shiloh Road, Grand Avenue & 54th Street West, and Lake Elmo Drive. A case study for each corridor examines how these investments impact real estate, visitors, and businesses.

3.1. North 30th Street

Corridor Overview

The North 30th Street Complete Streets corridor is located in Billings' downtown core, running between Grandview Boulevard to the north and Montana Avenue to the south. The corridor is home to several small businesses and some cornerstone health institutions in Billings, including the Billings Clinic and Intermountain Health St. Vincent Regional Hospital, along with many other smaller medical and dental offices. Together, Intermountain Health St. Vincent Regional Hospital and Billings Clinic provide over 600 licensed beds and employ over 7,000 healthcare workers and staff. The St. Vincent facility alone receives almost 40,000 emergency visits and 30,000 inpatient admissions each year.[3]

Figure 3.1.1 North 30th Street Study Area and Comparison Area



[3] Data provided by Intermountain Health St. Vincent Regional Hospital.

Multimodal transportation along this corridor is critical to ensure that people have access to medical services and employees have safe commuting networks. Complete Streets infrastructure enhancements and characteristics along the North 30th Street corridor are outlined below:

- The Complete Streets enhancements were added in 2011, including striped bike lanes from 6th Avenue North to 12th Avenue North.
- Ten years later, in 2021, shared-use arrows ("sharrows") were painted from Montana Avenue to 6th Avenue North. These additions are not included in the construction or maintenance costs as they completed after the initial project being considered.
- The corridor also features well-maintained sidewalks that are separated from the road by a landscape buffer in some places.
- The busy street also has several public transportation connections, including MET Transit bus route 1, the Downtown Circulator, which runs along the entire corridor, and connections to bus routes 5, 7, 19.

The striped bike lanes added in 2011 cost approximately $18,000 ($26,000 in 2025 dollars). Each year, maintenance of the Complete Streets elements, including crosswalks and bike lanes costs about $12,500 (in 2025 dollars). The largest cost is related to crosswalk repainting.

Source: Google Maps

As shown in Figure 3.1.1, the study area around the corridor includes parcels adjacent to the street. Residents, health institutions, and businesses at these locations are directly impacted by the transportation accessibility the Complete Streets project provides.

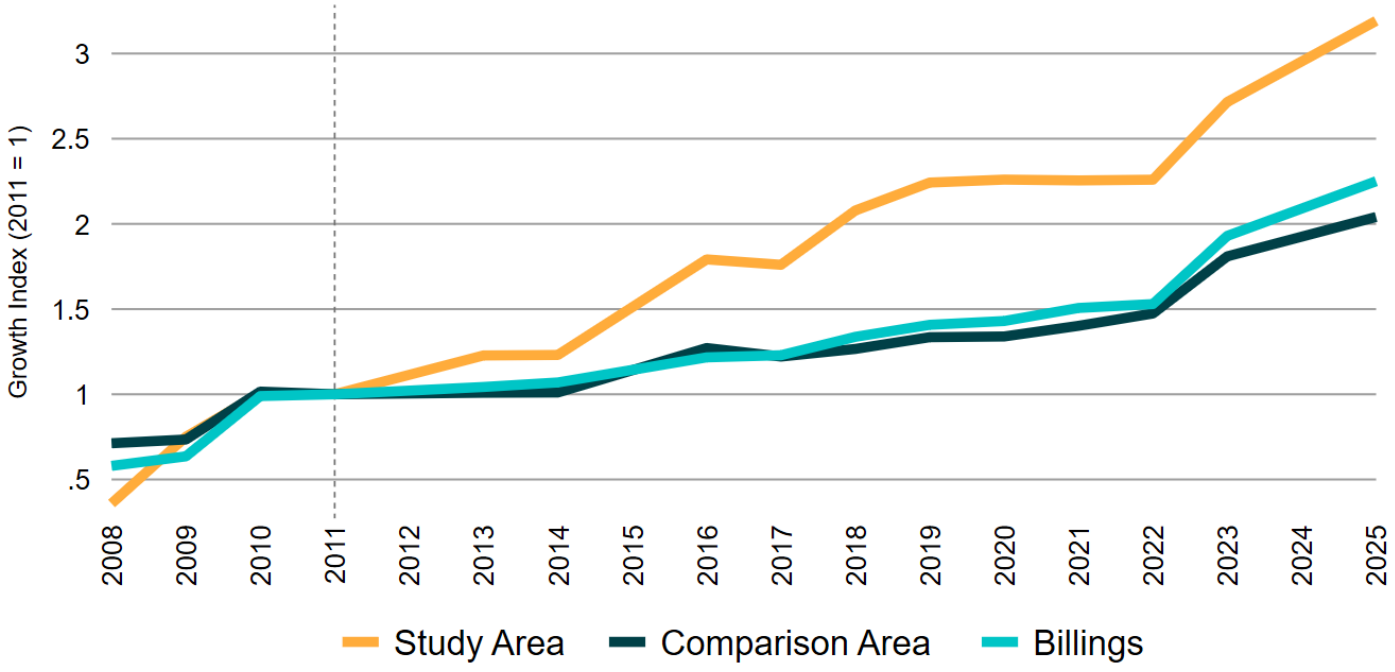
Two blocks to the west, North 32nd Street serves as the comparison corridor for this analysis. This corridor includes more residential uses than the study corridor, but still includes business activity as well. Beyond crosswalks (property owners maintain the sidewalks), which cost an estimated $6,300 annually to maintain, the parallel street does not have Complete Streets improvements that help pedestrians and cyclists navigate the roadway. The only exception is a one block stretch where a neighborhood bikeway crosses over N. 32nd St.

While pedestrians can walk across 6th Avenue North to make a north-south trip, the street is not connected for vehicular traffic. The only bus route along North 32nd Street is bus line 5 which runs along the short segment of the street between 4th Avenue North and 6th Avenue North. There are a few other bus stops towards the southern part of the corridor with connections to the 7 and 19 bus lines, but no bus connections north of 6th Avenue North. In 2025, the City of Billings made changes to North 32nd Street south of 6th Avenue North which are not considered as part of this analysis. Unfortunately, these changes were too recently completed at the time of this study to evaluate the potential impacts.

Real Estate and Building Impacts

Complete Streets investments can make corridors more desirable locations to live or open a business, in turn increasing real estate demand and pushing property values up. Property values along the North 30th Street corridor grew faster than the comparison area and city overall after the Complete Streets investment. As shown in Figure 3.1.2, property values along the corridor were more than three times higher in 2025 than 2011, growing from $88 million to $282 million. Some of this growth came from large additions and renovations at Yellowstone Medical Center (adding $9.3 million assessed value in 2016), Intermountain Health St. Vincent Regional Hospital (adding $10.9 additional assessed value in 2013), and the Billing Public School's Lincoln Center, (adding $9.9 million additional value in 2013). However, **even without these major additions and expansions, the corridor would have more than doubled, growing by 117 percent and outperforming the comparison area**, where 2025 assessed values were just over twice their 2011 value. This finding suggests that the Complete Streets investment could have bolstered property values along North 30th Street, increasing the value of existing properties and encouraging more real estate development along the corridor.

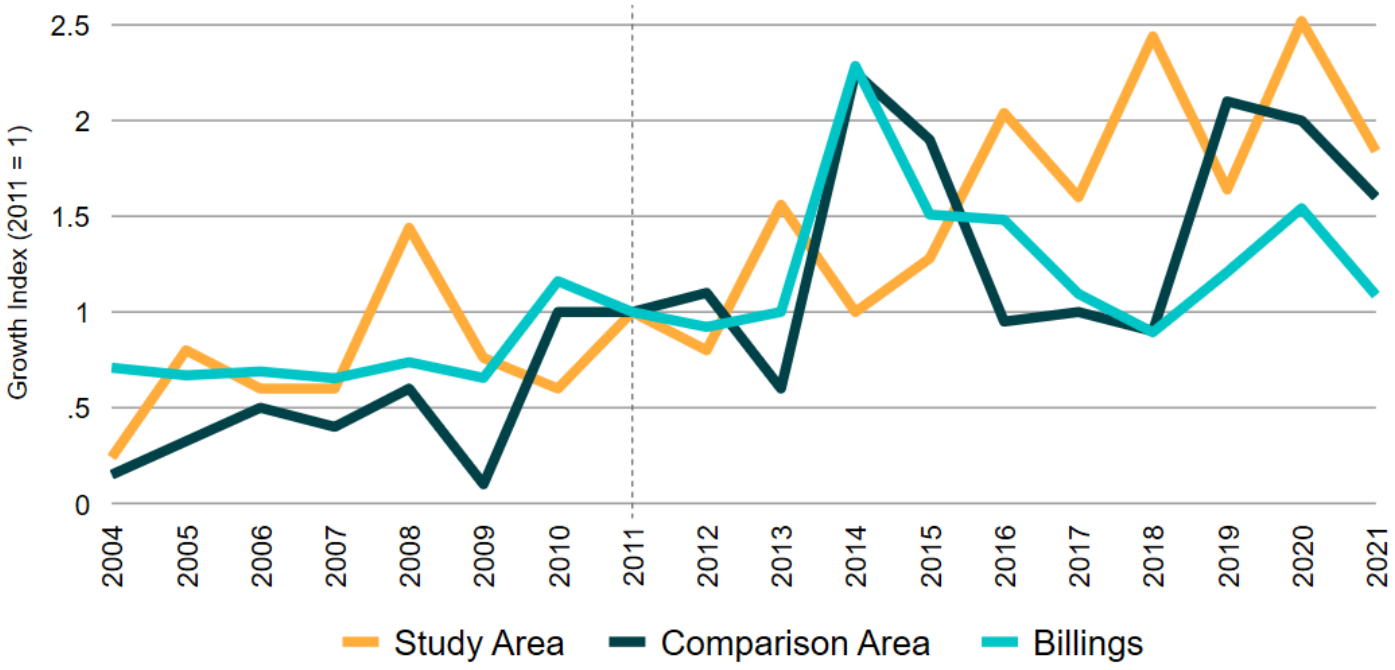
Figure 3.1.2 Growth Rate in Property Values at North 30th Street and Comparison Areas



Source: City of Billings Assessors Data.

Data on building permits provide an indicator of investment activity in an area. Although information on total associated investment amounts was not available for North 30th Street and permit counts are an imperfect proxy, the number of permits issued offers the best available measure of trends in building improvements. As shown in Figure 3.1.3, there is substantial year-to-year variability in the number of building permits in each area. The average number of building permits per year in the study area before the Complete Streets investment was 18, whereas after the project's completion that number jumped to 21 permits annually, a 15 percent increase. While this increase does not outperform the comparison area, which grew by 31 percent, it is higher than the city average growth of 6 percent.

Figure 3.1.3 Growth Rate in the Number of Building Permits at North 30th Street and Comparison Areas

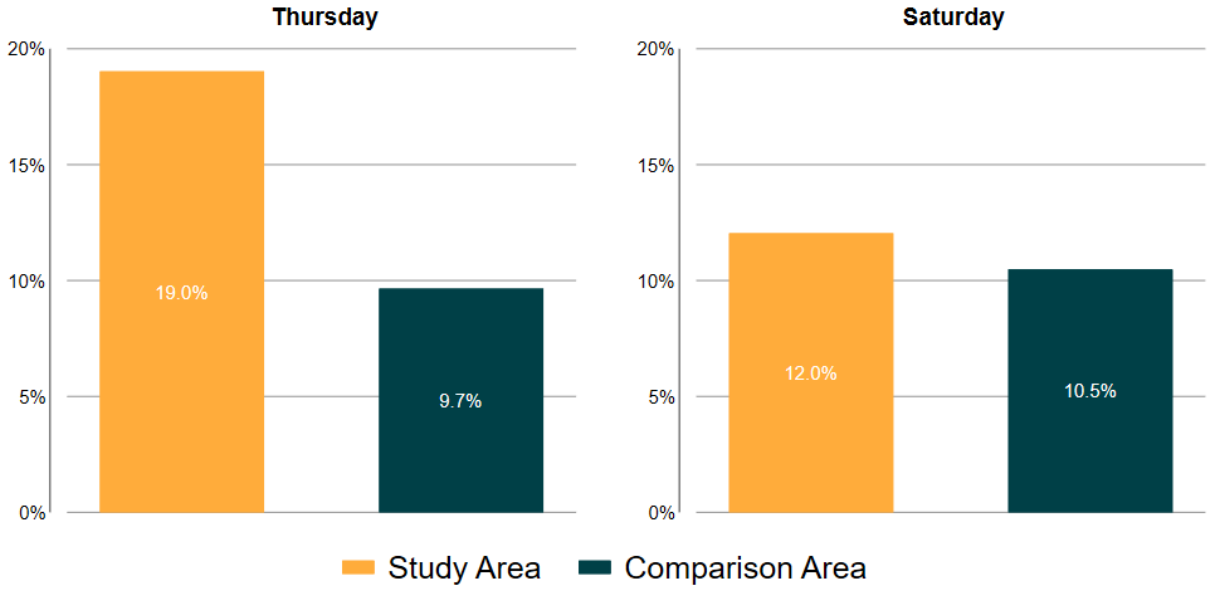


Source: City of Billings Building Permits Data.

Visitors and Business Impacts

Complete Streets investments can make areas more welcoming, safe, and accessible for residents and visitors traveling with active transportation modes, such as walking and biking. Replica data show the share of users walking or biking, but the data do not extend far enough back to provide a before-after comparison. Instead, this indicator focuses solely on the "second difference", the comparison across the study and comparison areas. As shown in Figure 3.1.4, a higher share of corridor visitors travel by bike, walking, or public transit in the study area than the comparison area. This result is true for both Thursday (representative of a typical weekday) and Saturday (representative of a typical weekend day), though it is more prominent during the work week. On a typical Spring weekday, 19 percent of visitors to North 30th Street walk, bike, or ride public transit, compared to less than 10 percent in the comparison area.

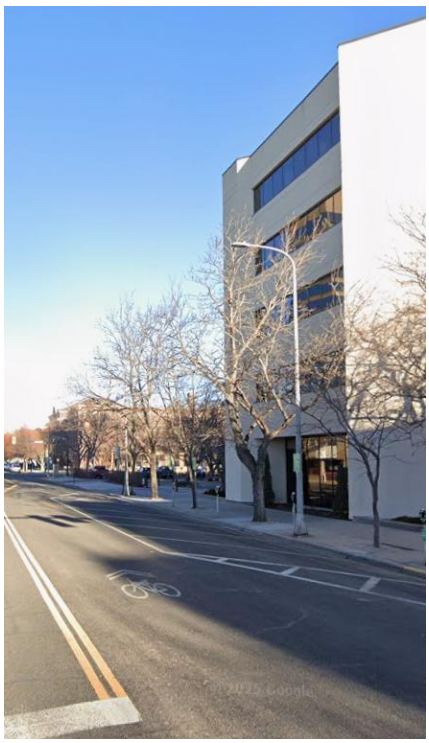
Figure 3.1.4 Share of Trips via Bike, Walk, and Public Transit, Spring 2025



Source: Replica

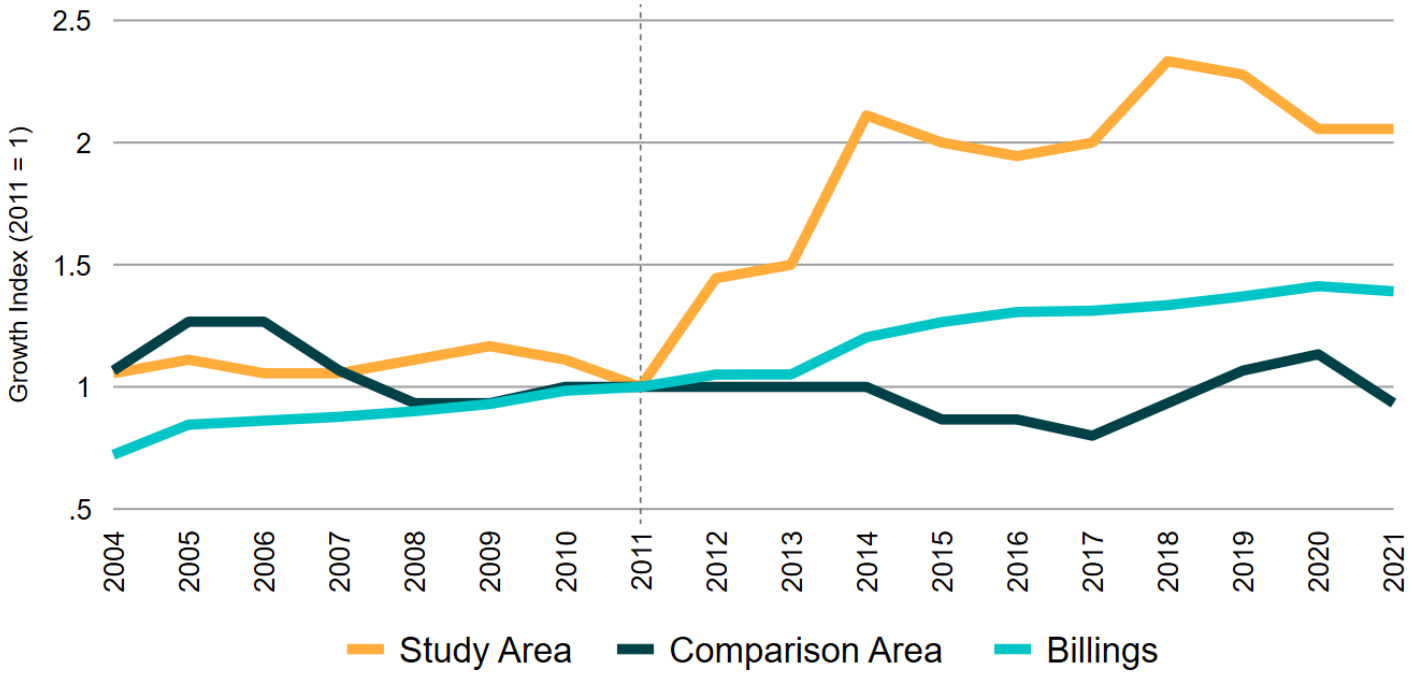
As a corridor attracts more visitors, it becomes a more appealing place to operate a business. Business license data are used to assess the impact of Complete Streets investment on business establishments, as shown in Figure 3.1.5. Prior to the Complete Streets construction in 2011, North 30th Street experienced a similar growth rate in business licenses to the comparison area and city overall. After the Complete Streets investment, the corridor experienced rapid growth in the number of businesses. In 2012, four new restaurant licenses were granted on North 30th Street, along with several new beauty and other services companies.

With the Complete Streets improvements in place, the corridor outperformed both comparison areas, with the number of business licenses more than doubling by 2014 (from 18 to 36) while the comparison area saw no growth (starting with 15 businesses in 2011 and ending with 14 in 2021) and the city overall grew by only 20 percent. After 2014, the North 30th Street corridor sustained its higher level of business activity, even despite a decline in businesses in 2020 due to the Covid-19 pandemic. In 2021, there were a total of 37 active businesses in the study area. This data points to strong business performance after the Complete Streets investment.



Source: Google Maps

Figure 3.1.5 Growth Rate in Business Licenses at North 30th Street and Comparison Areas



Source: City of Billings Business License Data.

Safety and Multimodal Level of Service Impacts

Safety

Due to a lack of "Pre-Project Period" crash data (only one year of crashes data prior to the project installation was available), a safety analysis was not completed for North 30th Street and its comparison area.

Multimodal Level of Service

The roadway elements, such as sidewalks, landscape buffers, bicycle lanes, enhanced crossing, and human-scale lighting, that comprise Complete Streets can impact the ease and efficiency that people walking and biking experience while traveling on the corridor. The impacts of these roadway features can be quantified using multimodal level of service (MMLOS), which considers factors such as sidewalk width, landscape buffers, bicycle facilities, roadway vehicular volumes, and posted speed limits. Level of service analyses assign a facility a grade between "A" for excellent conditions and "F" for unacceptable conditions. While MMLOS measures traveler perception based on these facility features, traditional vehicular level of service analysis relies primarily on the delay experienced at intersections. Table 3.1.1 compares the MMLOS for walking and bicycling, for the study and comparison corridors, in the post-project period. As shown below, the study corridor provides a better level of service for pedestrians and bicycles than the comparison corridor. Unfortunately, the necessary data to assess pre-project MMLOS was not available.

Table 3.1.1 MMLOS for North 30th Street and Comparison Area in the Post-Project Period

	Study Corridor	Comparison Corridor
Pedestrian Level of Service	B	E
Bicycle Level of Service	C-D	F

Source: Google Maps

Summary of Findings

Overall, the evidence points to strong positive impacts of the Complete Streets investment along North 30th Street:

- **Property Values:** Property values more than tripled from 2011 to 2025, significantly outpacing both the comparison corridor and citywide growth, indicating strong increased demand along the corridor.
- **Building Permits (Development Activity):** Permit activity rose by about 15 percent after the investment, exceeding citywide trends but trailing the comparison area, suggesting moderate but positive development momentum.
- **Multimodal Access & Visitors:** A substantially higher share of visitors arrive by walking, biking, or transit compared to the comparison area, reflecting improved accessibility along the corridor.
- **Business Activity:** The number of business licenses more than doubled shortly after the improvements and remained elevated over time, demonstrating strong and sustained business growth.
- **Multimodal Level of Service:** The study corridor reflects a better multimodal level of service for both pedestrians and bicycles than the comparison corridor, following project implementation.

Across multiple indicators, the corridor shows consistent positive impacts, suggesting the Complete Streets investment supported increased accessibility, economic activity, and corridor vitality.

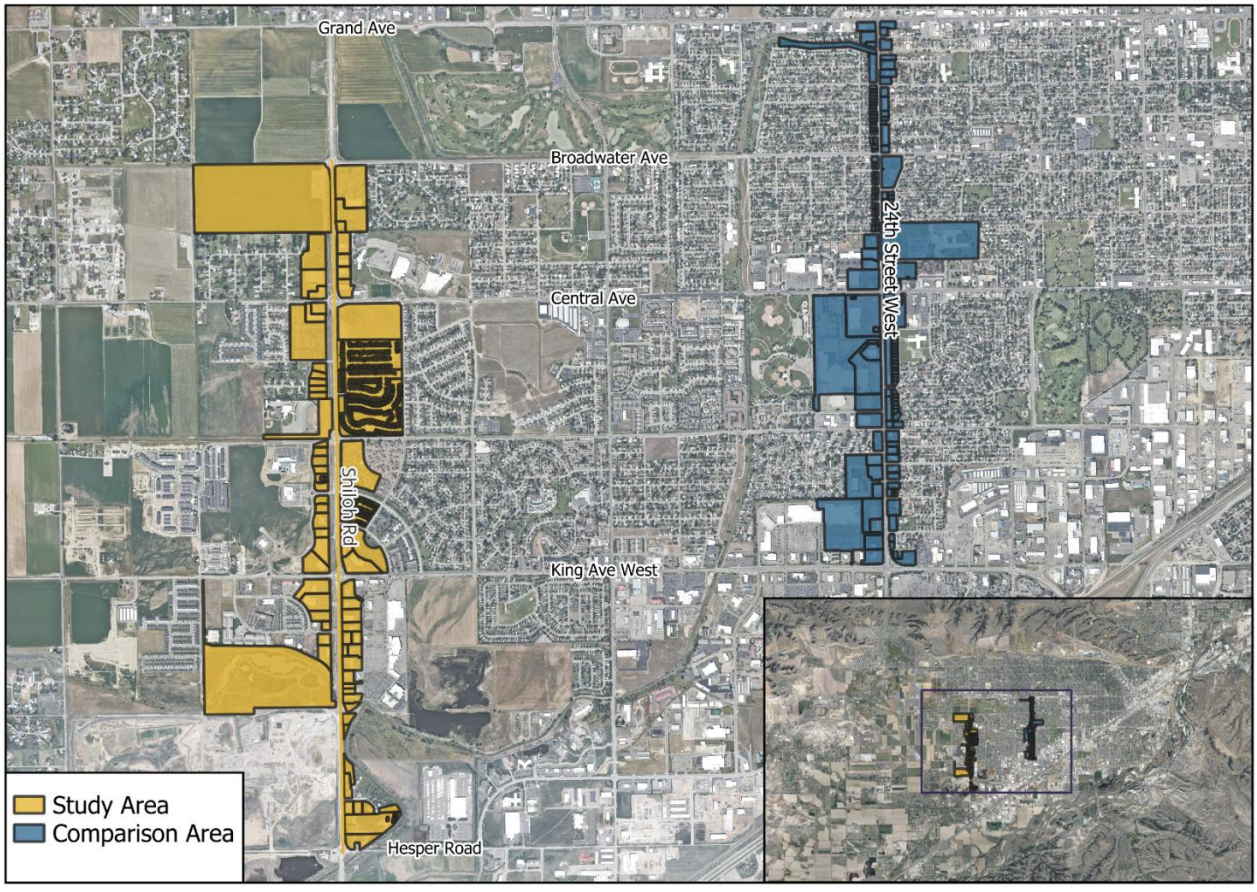
3.2. Shiloh Road

Corridor Overview

Shiloh Road is a north/south connector located on the west side of Billings. In 2010, the two-lane country road was rebuilt into a four-lane divided roadway with roundabouts, turn lane pockets, and a landscaped median. Concurrently with the roadway construction, pedestrian refuge islands were installed and a multi-use trail was constructed along the length of the road. The trail begins at Rimrock Road and runs south along Shiloh Road, primarily on the west side, for more than four miles, ending at ZooMontana, a 70-acre park and botanical garden.[4] The entire roadway rebuild cost $10.4 million ($14.9 million in 2025 dollars), $1.3 million ($1.9 million in 2025 dollars) of which went towards Complete Streets costs for the crossings and multi-use trail. Each year, maintenance of the Complete Streets improvements costs $16,300 (2025 dollars).

As shown in Figure 3.2.1, this study focuses on the 2.5-mile section running from Broadwater Avenue to Hesper Road, where the bulk of the businesses and development are located. The study area is defined by property parcels adjacent to this stretch of the roadway.

Figure 3.2.1 Shiloh Road Study Area and Comparison Area



[4] TrailLink. Shiloh Road Trail. https://www.traillink.com/trail/shiloh-road-trail/.

Land use along the study area corridor is predominantly commercial and characterized by a modern suburban layout. Large-format retail, national chain restaurants, medical offices, financial institutions, hotel, and service businesses line the corridor, typically set back behind parking lots with large road front signage. Interspersed between commercial parcels are newer multifamily apartment complexes, townhomes, senior living facilities, and residential subdivisions, signaling the corridor's role as both a shopping destination and a daily-use route for West End travelers. To the south, the corridor provides access to the Shiloh Conservation Area, a few churches, and educational institutions. The Shiloh Road multi-use trail is also an important connector for western Billings' trail network, offering connections to the Rimrock Road Trail, Big Ditch Trail and King Avenue West Trail.[5] Shiloh Road is served by several MET Transit bus routes, including route 13 to the south and route 21 to the north.

Source: Trail Link, Shiloh Road Trail. https://www.traillink.com/trail/shiloh-road-trail/.

A comparison area along 24th Street West, extending from Grand Avenue to King Avenue West, was selected due to its similar density and mix of uses. Like the study corridor, it includes a combination of national and local restaurants and retail chains interspersed with residential subdivisions. The corridor is also home to the Rimrock Mall, with 600,000 square feet offering more than 60 retail and restaurant businesses.[6] However, the 24th Street West corridor lacks Complete Streets features beyond attached sidewalks and a few crossings, which cost the City $3,200 each year to maintain (crosswalks only; sidewalks are maintained by property owners). The four-lane roadway is configured with a center turning lane and there is no dedicated bicycle infrastructure. Sidewalk connectivity is lacking due to gaps as well as a lack of marked crossings in some places, as shown in the image below on the left side of the road. The corridor is well served by MET Transit bus routes, with connections to routes 3, 7, 10, 13, 19, and 21.

[5] TrailLink. Shiloh Road Trail. https://www.traillink.com/trail/shiloh-road-trail/.
[6] Rimrock Mall. About Us. https://www.rimrockmall.com/about-us.

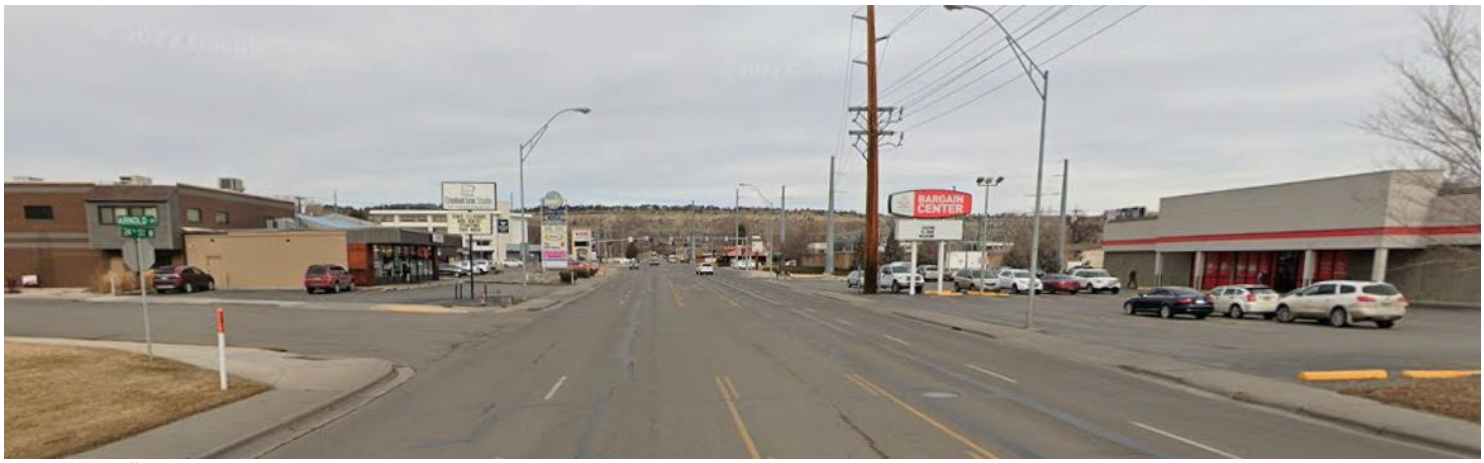
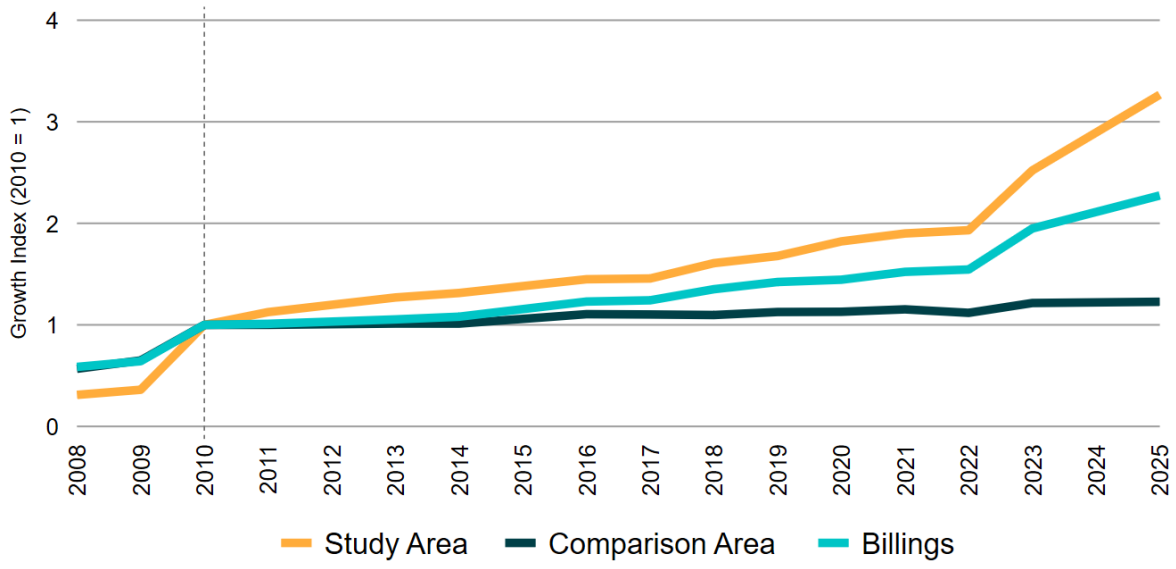


Photo of 24th Street West comparison area.
Source: Google Maps.

Real Estate and Building Impacts

Property values along the Shiloh Road corridor grew at a faster rate than the rest of the city and the comparison area following the Complete Streets investments. In 2010, properties adjacent to the corridor were assessed at $103 million (aggregated across all properties). By 2022, the value had almost doubled, reaching $199 million. Meanwhile, properties in the rest of Billings grew by 50 percent while the comparison area experienced only 12 percent growth. After 2022, property values rose rapidly across Billings and along Shiloh Road, while the 24th Street West corridor continued to experience minimal growth. Even during this period of broader market expansion, the Shiloh Road corridor outpaced the city overall, growing by nearly 70 percent compared to 47 percent citywide. This consistent outperformance suggests that the Complete Streets investments may have helped the corridor attract and retain property value.

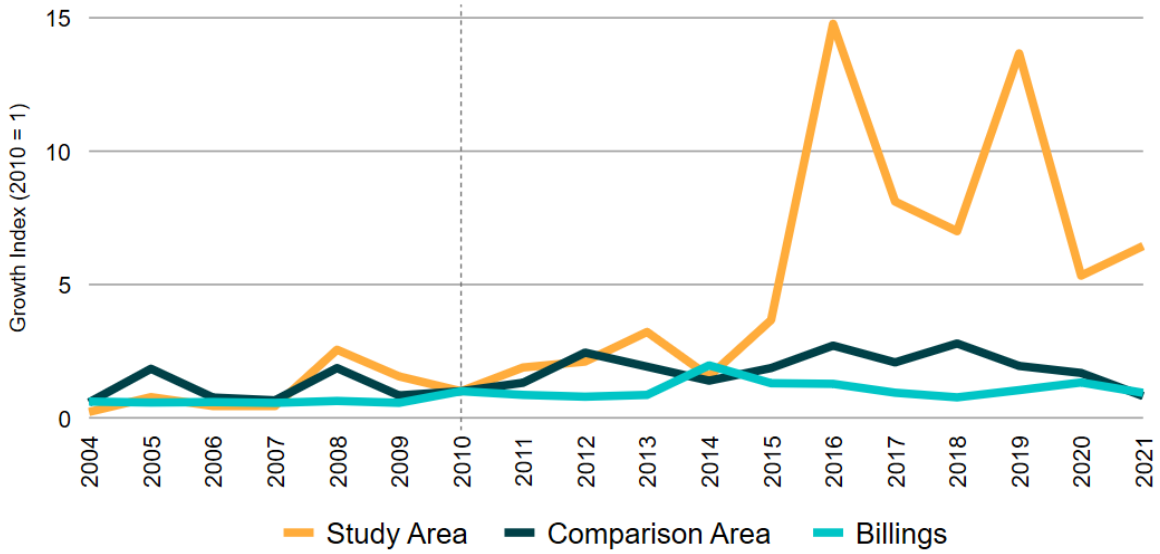
Figure 3.2.2 Growth Rate in Property Values at Shiloh Road and Comparison Areas



Source: City of Billings Assessors Data.

While considered a weaker indicator, data on the number of building permits provide an estimate of investment activity in an area. As shown in Figure 3.2.3, growth in the number of building permits on Shiloh Road tracked with the comparison areas until about 2014. After that, the number of building permits along the corridor jumped from 14 permits in 2014 to 133 in 2016, as development along the road took off. From 2016 through 2019, there were at least 60 permits per year along the corridor. In 2020 and 2021, the number of building permits slowed down, with 48 and 58 respectively. While the timing of the impact was delayed, it is possible that the Shiloh Road multi-use trail contributed to the area's success and continued investment as it added additional infrastructure to attract businesses and residents to the growing area.

Figure 3.2.3 Growth Rate in the Number of Building Permits at Shiloh Road and Comparison Areas

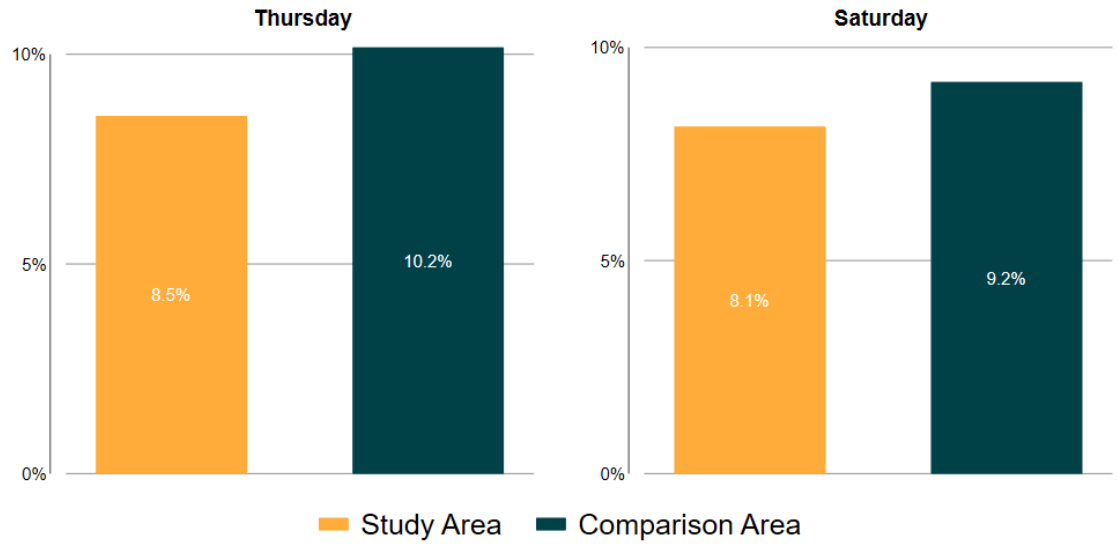


Source: City of Billings Building Permits Data.

Visitors and Business Impacts

On a typical Spring day, on both the weekend and during the work week, Shiloh Road has over 700 walkers, bikers, and riders of public transit. These users account for about 8 percent of the corridor's total users, a slightly smaller percentage than the comparison corridor. In both the study and comparison area, the vast majority of these users are walkers, with biking and public transit accounting for less than one percent of total users. Without before and after data on the number of visitors and use by mode, it is difficult to draw conclusions from this data. One possible reason the comparison area is shown to have more walkers is because the Billings West High School is located on the corridor, and many student use free periods to walk to local shops and restaurants.

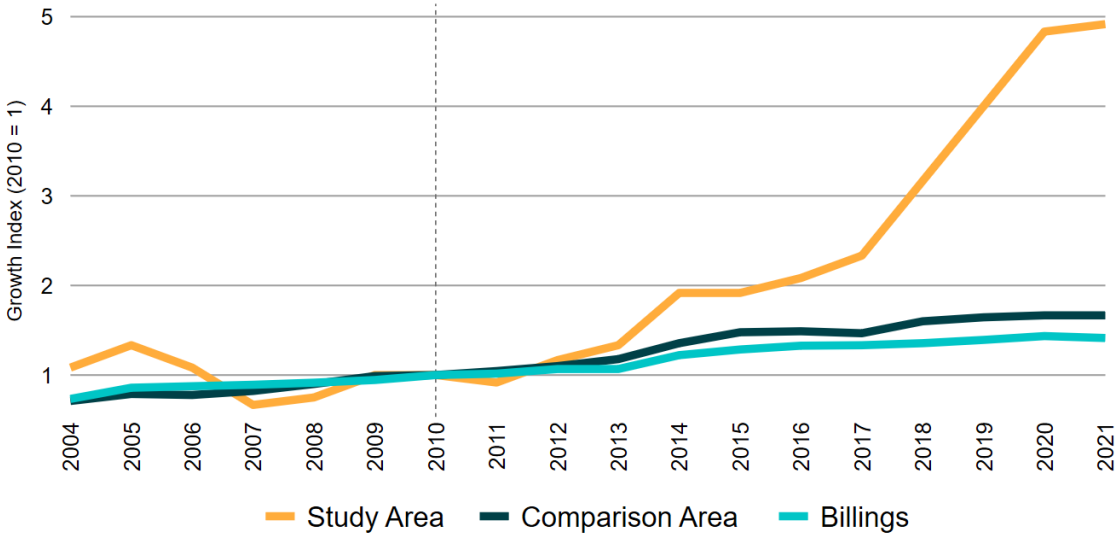
Figure 3.2.4 Share of Trips via Bike, Walk, and Public Transit, Spring 2025



Source: Replica

The number of business licenses along the corridor grew substantially after 2013, two years after the corridor was completed. By 2021, the number of business licenses along the corridor was almost five times the number in 2010, when the roadway project was completed. Meanwhile, the comparison area and city overall grew 67 and 41 percent, respectively. While it is difficult to distinguish between impacts from the roadway project versus the Complete Streets elements, having a network of active transportation is an additional amenity that supports business growth and patronage.

Figure 3.2.5 Growth Rate in Business Licenses at Shiloh Road and Comparison Areas



Source: City of Billings Business License Data.

Safety and Multimodal Level of Service Impacts

Safety

The safety impacts of this Complete Streets project were not analyzed due to a lack of pre-project data available for the case study locations, as the project was completed in 2010.

Multimodal Level of Service

MMLOS was calculated for walking and bicycling on the study and comparison corridors. Data for this indicator is only available in the post-project period, so before and after comparisons are not possible. Based on the Oregon Department of Transportation's Simplified MMLOS Calculator, the study corridor's MMLOS was calculated to be 'E' for pedestrians and 'E-F' for bicyclists. However, this low result is attributed to the high posted speed limit on Shiloh Road (50 mph) and the tool's inability to consider facility type (i.e. the increased comfort that a multi-use trail provides in comparison to on-street bicycle lanes or an attached sidewalk). Alternatively, using the Oregon Department of Transportation's Separated Buffered Bikeways Calculator, the Shiloh Road multi-use trail is calculated to be a level of service 'A' for safety and comfort. However, this tool may go too far in the other direction, overstating the level of service because it does not account for the high speeds allowed on the corridor.

With this in mind, the Pedestrian Level of Traffic Stress (PLTS) was calculated using the methodology developed by the Center for Pedestrian and Bicyclist Safety. The PLTS for the study corridor was calculated as 2, which means it is generally "low stress" and comfortable for children over the age of 10 and adults, while people with mobility and sensory limitations may experience some challenges. This PLTS score more realistically reflects the experience of active transportation users on Shiloh Road's multi-use trail.

In summary, the Shiloh Road corridor is well equipped to support active transportation, featuring a 10-foot multi-use trail set more than 10 feet away from the roadway. In contrast to the comparison corridor, both pedestrians and bicyclists have a better user experience along the study corridor than the comparison corridor.

Summary of Findings

The Shiloh Road corridor demonstrated strong performance across many of the analyzed metrics, including,

- **Property Values:** Property values along Shiloh Road consistently outpaced both the comparison corridor and citywide growth, nearly doubling from 2010 to 2022 and continuing to grow faster than the city thereafter, indicating strong and sustained corridor demand.
- **Building Permits (Development Activity):** Development activity surged several years after project completion, with permits increasing dramatically after 2014 and remaining elevated through 2019, suggesting the corridor became a major focus for new investment.
- **Multimodal Access & Visitors:** Over 700 people traveling the corridor on a typical Spring day either walk, bike, or use public transit, accounting for 8 percent of all visitors.
- **Business Activity:** The number of business licenses grew nearly fivefold after the project, far exceeding growth in both the comparison area and city overall, demonstrating significant expansion in commercial activity.

- **Multimodal Level of Service:** Due to the higher posted speed limit on Shiloh Road than on 24th Street West, pedestrian and bicycle level of service are slightly worse on the study corridor than the comparison corridor. However, this finding reflects the limitations of the assessment tool, which does not capturing buffer space or differentiating multi-use trails from sidewalks.

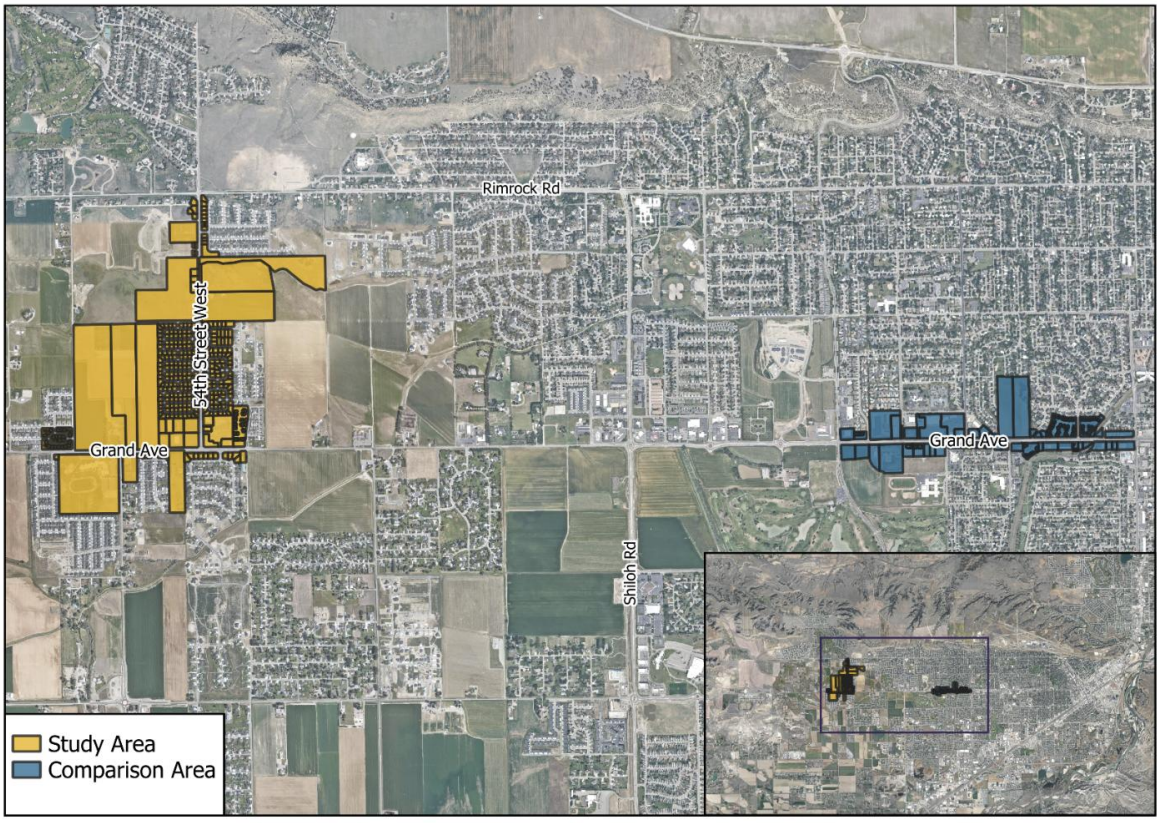
The corridor shows strong long-term growth across property values, development, and business activity, suggesting that the Complete Streets components, alongside broader roadway improvements, helped support a rapidly developing commercial corridor.

3.3. Grand Avenue & 54th Street West

Corridor Overview

Grand Avenue is an east-west corridor that intersects with 54th Street West on the west side of Billings. In 2018, Grand Avenue was rebuilt from a two-lane county road into an arterial road with a center two-way left-turn lane (center turn lanes were already present between 58th Street and Wilderness Drive). Concurrently with the roadway reconstruction, a multi-use trail was constructed along Grand Avenue and 54th Street, constituting the main Complete Streets element of the reconstruction. In total, the roadway reconstruction cost $2.7 million ($3.4 million in 2025 dollars), with the Complete Streets elements costing a total of $360,000 ($461,700 in 2025 dollars). Each year, the multi-use trail costs $10,300 to maintain, whereas the roadway maintenance, including snow removal, sweeping, and line painting, totals $50,300 annually.

Figure 3.3.1 Grand Avenue & 54th Street West Study Area and Comparison Area



The study area corridor is characterized by several large housing developments, broken up by some restaurant and retail uses, particularly directly adjacent to the intersection of Grand Avenue and 54th Street West. Interspersed with these uses are large blocky parcels that are primarily used for agricultural purposes. Billings MET Transit does not provide bus services to this area of the city.

Source: Google Maps.

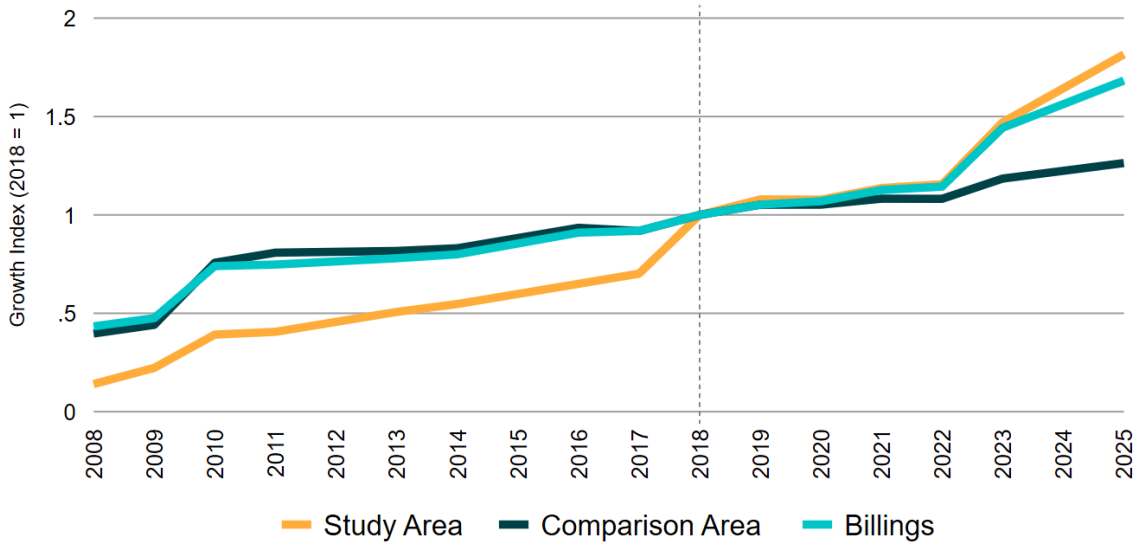
The comparison corridor is located on a segment of Grand Avenue to the east of the study corridor, spanning from Zimmerman Trail/32nd Street West to 24th Street West. Like the study area, the comparison corridor is also characterized by dense housing developments, retail and restaurant uses, and larger parcels of undeveloped agricultural land. This section of Grand Avenue has not seen substantial investment in Complete Streets improvements and does not have any bicycle or pedestrian infrastructure beyond standard sidewalks and crossings, which cost the City an estimated $2,600 annually to maintain (crosswalks only; sidewalks are maintained by the property owner). There are relatively few marked crossings, and in some locations, the roadway cross-section is five lanes of vehicular traffic. The comparison corridor is served by two MET Transit routes: lines 5 and 21.

Source: Google Maps

Real Estate and Building Impacts

Property values along the study corridor totaled $88.8 million in 2017, the year prior to the project. By 2025, property values had grown by almost 160 percent, reaching $229.8 million. As shown in Figure 3.3.2, the comparison area and city overall also experienced growth over the period, but at a substantially slower rate than the study area. Between 2017 and 2025, the comparison area grew by 38 percent and the city overall grew by 83 percent. This finding demonstrates that the study area outperformed the comparison area and city, suggesting that the roadway and Complete Streets improvements led to meaningful impacts on property values.

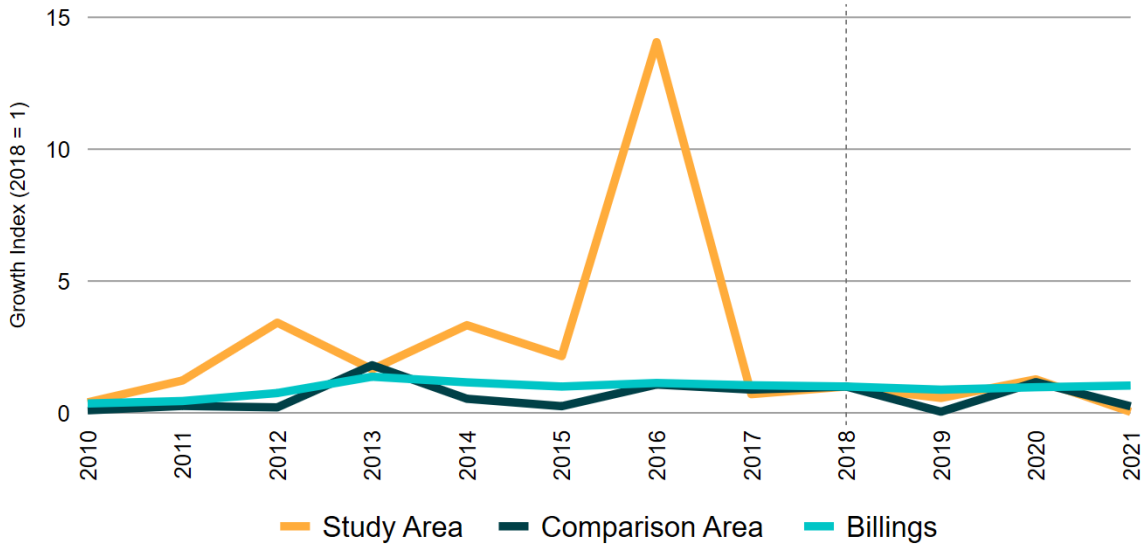
Figure 3.3.2 Growth Rate in Property Values at Grand Ave and Comparison Areas



Source: City of Billings Assessors Data.

Data on the growth rate in the value of building permits in the study and comparison corridor are shown in Figure 3.3.3. As shown in the figure, the study area had a spike in building permit value in 2016 but experienced a growth rate very similar to the comparison area and city overall between 2017 and 2021. This data does not demonstrate strong impacts.

Figure 3.3.3 Growth Rate in the Value of Building Permits at Grand Avenue & 54th Street and Comparison Areas

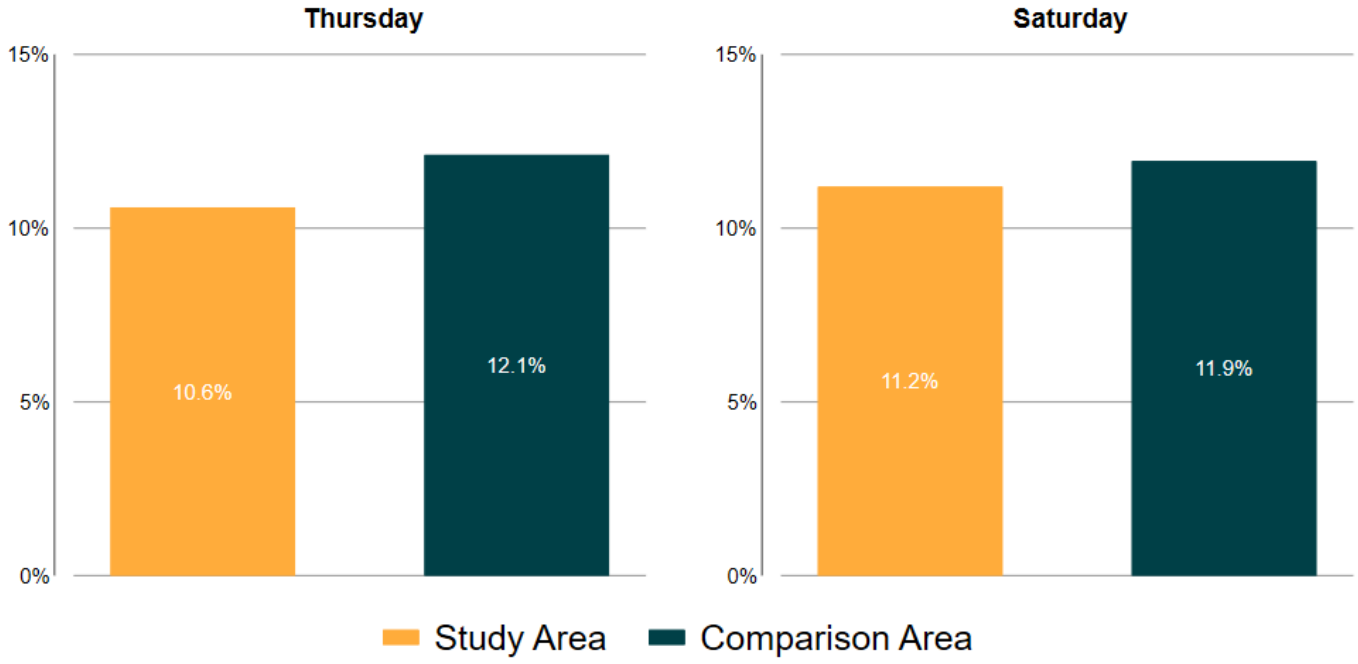


Source: City of Billings Building Permits Data.

Visitors and Business Impacts

The share of visitors to the corridor who travel via biking, walking, or riding public transit is similar to, though slightly lower than the comparison area. On both a typical spring weekday and weekend day, about 11 percent of Grand Avenue & 54th Street West travel via those three transportation modes compared to about 12 percent in the comparison area. In both areas, walking makes up the vast majority of travelers via these modes, with biking accounting for 1 percent of all users and less than one percent traveling via public transit. Without sufficient data to understand the time trends in this visitation, it is difficult to draw conclusions about the impact of the Complete Streets improvement on different modal uses.

Figure 3.3.4 Share of Trips via Bike, Walk, and Public Transit, Spring 2025



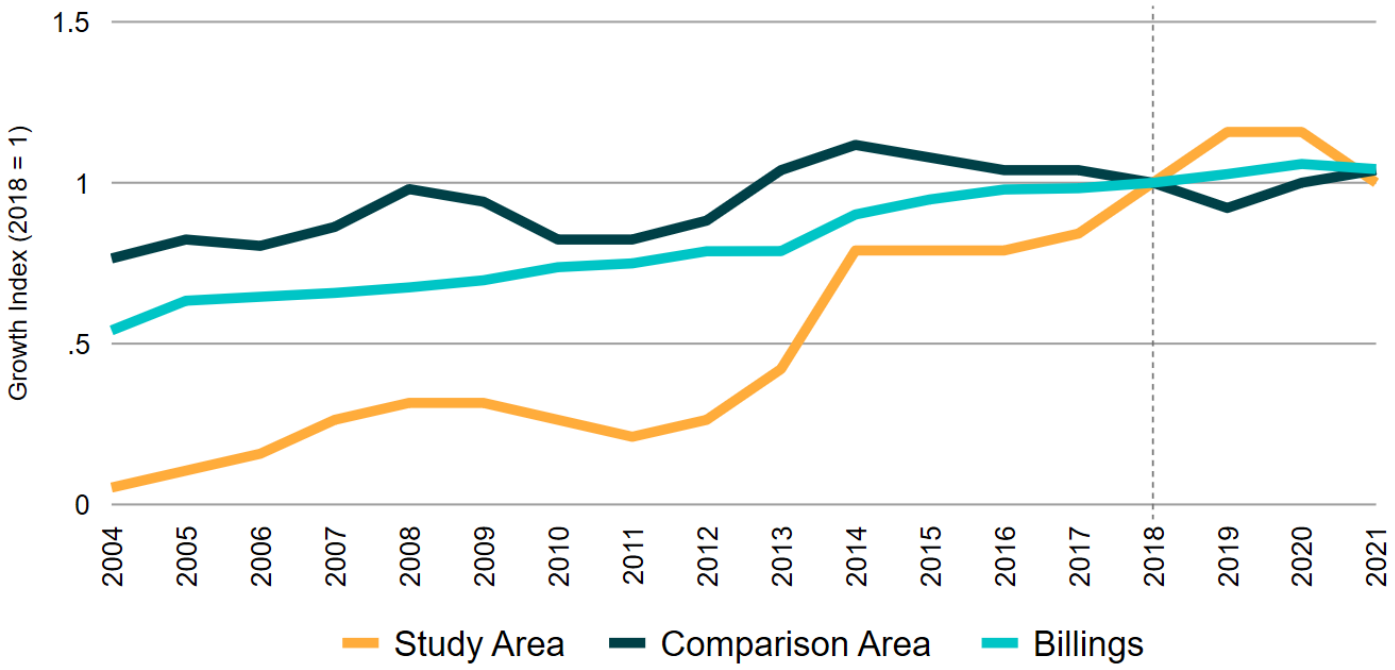
Source: Replica

There is strong evidence, however, that the Complete Streets investment at Grand Avenue and 54th Street West benefited businesses along the corridor. As shown in Figure 3.3.5, prior to the 2018 improvement, the number of business licenses along the corridor remained largely flat since 2014, with approximately 15 active licenses each year. In 2019, the number increased to 22 and remained at that level in 2020. In 2021, likely due to the COVID-19 pandemic, the number of business licenses declined slightly to 19, still above the pre-project average. The pandemic disproportionately affected businesses that tend to benefit most from Complete Streets investments, such as restaurants, cafés, and retail establishments, which rely heavily on foot traffic. The decline in these uses may have tempered what would have otherwise been even stronger post-investment growth along the corridor.

The comparison area and the city overall did not experience business growth between 2018 and 2020, indicating that the increase observed in the study area was not part of a broader economic trend. Rather, this

divergence suggests that the growth along the corridor was likely driven by the Complete Streets investment, which may have created more favorable conditions for business activity by improving accessibility, visibility, and the overall pedestrian environment.

Figure 3.3.5 Growth Rate in Business Licenses at Grand Avenue and 54th Street West and Comparison Areas



Source: City of Billings Business License Data.

Safety and Multimodal Level of Service Impacts

Safety

Table 3.3.1 delineates the safety analysis performed for the Grand Avenue & 54th Street corridor and its comparison corridor, including the total number of crashes and the societal cost of these crashes based on the severity of the crashes, known as the "KABCO value". The table analyzes these societal crash costs in total, per year, and normalized by the annual traffic volumes the corridor experiences. As shown, the societal cost of crashes along the study corridor were higher in the post-project period than in the pre-project period. However, this result is due to two fatal crashes that occurred in the post-project period, neither of which involved any vulnerable road users, and one of which was attributable to driving under the influence of drugs or alcohol. With this in mind, the safety analysis results are largely attributed to factors outside of the influence of the Complete Streets investments.

Table 3.3.1 Pre-Project and Post-Project Societal Cost Values for Grand Avenue & 54th Street and Comparison Area

		Study Corridor	Comparison Corridor
Pre-Project Period	Data Years	2013-2017	2013-2017
	Number of Years	5	5
	Pre-Project Crashes Total Crashes	35	207
	Crashes Per Year	7	41
	Total Societal Cost of Crashes (KABCO Value)	$4,339,800	$13,500,900
	Societal Cost of Crashes per Year (KABCO Value)	$867,960	$2,700,180
	Societal Cost of Crashes, Normalized by Traffic Volumes (AADT-Normalized KABCO Value*)	$163	$169
Post-Project Period	Data Years	2018-2023	2018-2023
	Number of Years	6	6
	Post-Project Crashes Total Crashes	43	206
	Crashes Per Year	7	34
	Total Societal Cost of Crashes (KABCO Value)	$29,913,800	$30,770,700
	Societal Cost of Crashes per Year (KABCO Value)	$4,985,633	$5,128,450
	Societal Cost of Crashes, Normalized by Traffic Volumes (AADT-Normalized KABCO Value*)	$870	$311

*Based on average AADT per timeframe at a specific MDT Count location. Calculation is KABCO per year (Average of Year 1 AADT, Year 2 AADT, etc.)

This analysis also investigates the Complete Street project's impact on potential societal crash costs. For example, several elements of the Complete Streets project on Grand Avenue & 54th Street are associated with crash modification factors (CMFs), which are a statistical measure for evaluating crash reduction potential for a specific treatment, such as:

- Installing a Rectangular Rapid Flashing Beacon (RRFB) can reduce pedestrian-vehicle crashes up to 52 percent.
- Installing a Multi-Use Trail can reduce pedestrian-vehicle crashes up to 59 percent.
- Installing Left Turn Lanes can reduce all roadway injury crashes up to 79 percent.

- Installing Right Turn Lanes can reduce rear-end crashes up to 70 percent.
- Replacing a Stop-Controlled intersection with a Traffic Signal can reduce all vehicle crashes up to 61 percent.

These values were used to calculate the potential societal crash cost savings associated with Complete Streets investments. For the Grand Avenue & 54th Street corridor, the combined impact of the CMFs shown above was estimated to have the potential to reduce total societal crash costs by $2.2 million, or about $450,000 per year. This represents a 28.5 percent reduction in societal crash costs compared to the pre-project period. However, as outlined above, actual societal crash costs increased on the study corridor in the post-project period due to two fatal crashes that did not involve vulnerable road users.

Multimodal Level of Service

Table 3.3.2 compares the MMLOS for walking and bicycling, for the study and comparison corridors, in the post-project period. As shown below, the study corridor provides a slightly better level of service for pedestrians and a better level of service for bicycles than the comparison corridor.

Table 3.3.2 MMLOS for Grand Avenue & 54th Street and Comparison Area in the Post-Project Period

	Study Corridor	Comparison Corridor
Pedestrian Level of Service	B-C	C
Bicycle Level of Service	C-D	F

Summary of Findings

Overall, the evidence points to positive impacts of the Complete Streets investment along Grand Avenue & 54th Street:

- **Property Values:** The study area outperformed the comparison area and city, growing by 160 percent between 2017 and 2025 and suggesting that the roadway and Complete Streets improvements led to meaningful impacts on property values.
- **Building Permits (Development Activity):** Building permit value data, a relatively weak indicator, do not demonstrate strong impacts.
- **Multimodal Access & Visitors:** The share of visitors to the corridor who travel via biking, walking, or riding public transit is similar to, though slightly lower than the comparison area.
- **Business Activity:** There is strong evidence that the Complete Streets investment at Grand Avenue and 54th Street West benefited businesses along the corridor, which experienced growth in businesses while the city overall and comparison area remained flat.
- **Safety:** While the safety analysis indicates higher societal crash costs on the study corridor in the post-project period, this is largely attributable to two fatal crashes that did not involve vulnerable road users, making the actual impact inconclusive.

- **Multimodal Level of Service:** The level of service provided by the study corridor was better for both pedestrians and bicycles compared to the comparison corridor.

Across many of the indicators, the corridor shows consistent positive impacts, suggesting the Complete Streets investment supported increased property values and business activity.

3.4. Lake Elmo Drive

Corridor Overview

Lake Elmo Drive is a north-south corridor located to the north of Downtown Billings, in a neighborhood known as Billings Heights. The area's location lends itself to both a tranquil residential area and a highly connected and accessible neighborhood. At the north end of Lake Elmo Drive is Lake Elmo State Park, a 64-acre reservoir where people swim, boat, fish, and more. The park also includes a playground and 1.4 miles of walking trail around the perimeter of the lake.

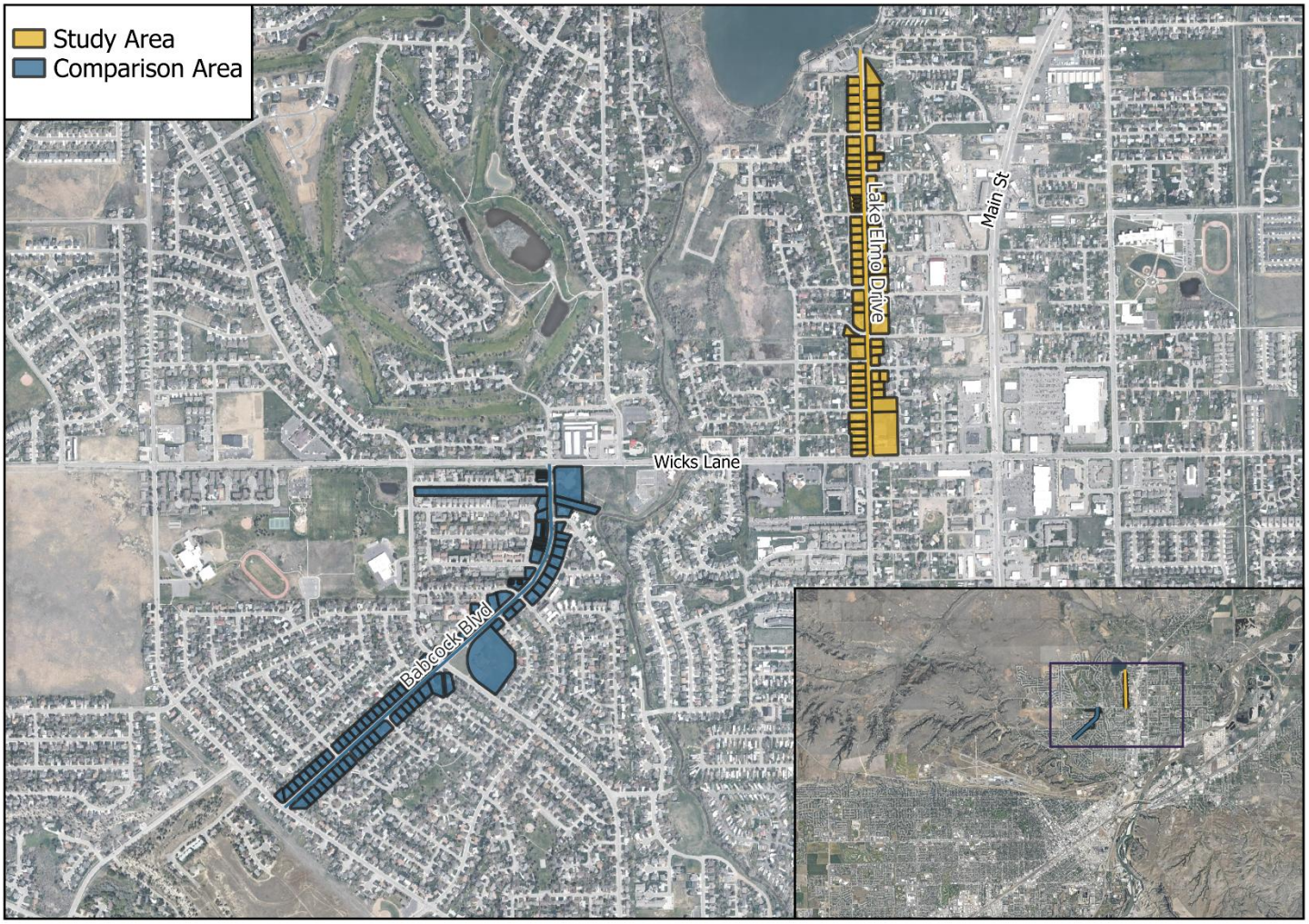
As shown in Figure 3.4.1, this study focuses on the roughly one-mile section of Lake Elmo Drive north of Wicks Lane. In 2020, striped bike lanes were added to the road, constituting the main Complete Streets element studied in this analysis. At the same time as the bike lanes were added, the entire roadway was also sealed and restriped. In total, the project cost $113,000, about $25,500 of which came from the Complete Streets elements ($140,600 and $31,700 in 2025 dollars). Each year, maintenance to the striped bike lanes costs an estimated $4,700.

The stretch of the road where the Complete Streets investments took place is almost entirely residential, with only a small number of businesses. Because of the residential nature of the corridor, this case study does not include business impacts.

Source: Google Maps.

Nearby Babcock Boulevard constitutes the comparison area for this study. Like Lake Elmo Drive, Babcock Boulevard is a quiet residential road in the Heights neighborhood. However, the comparison corridor does not have any Complete Streets elements beyond sidewalks and a few crosswalks, which cost the City $800 to maintain each year (crosswalks only; sidewalks are maintained by property owners).

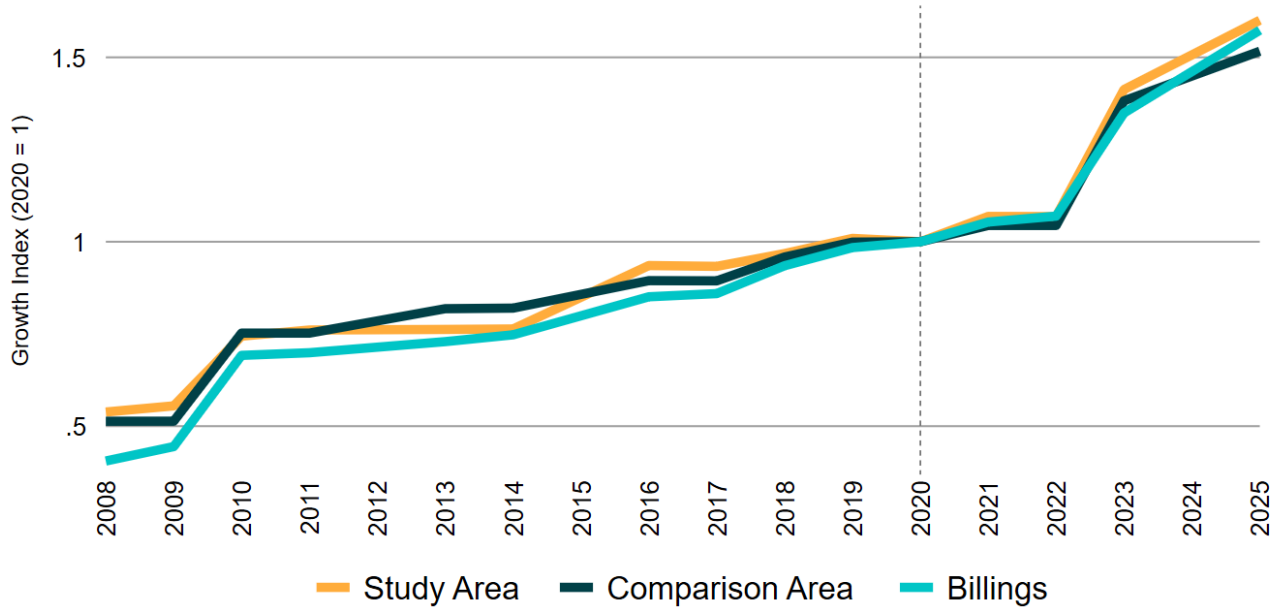
Figure 3.4.1 Lake Elmo Drive Study Area and Comparison Area



Real Estate and Building Impacts

Property values in the study area closely followed those in the comparison area and city overall, growing steadily until 2022 and then rising sharply in 2023 and continuing at a higher growth rate through 2025. While the study area slightly outperformed the comparison area by 2025, the evidence is not strong enough to point to impacts related to the Complete Street investment.

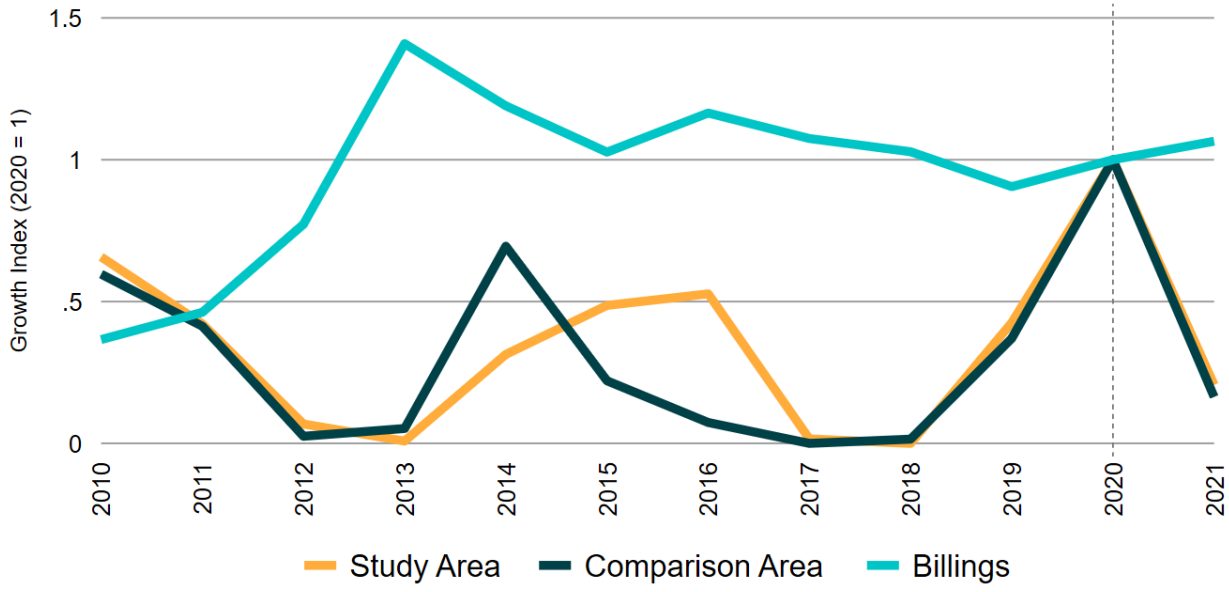
Figure 3.4.2 Growth Rate in Property Values at Lake Elmo Drive and Comparison Areas



Source: City of Billings Assessors Data.

Trends in the value of building permits in the study area almost exactly mirror trends in the comparison area after 2016. This finding does not point to strong impacts associated with the Complete Streets project.

Figure 3.4.3 Growth Rate in the Value of Building Permits at Lake Elmo Drive and Comparison Areas



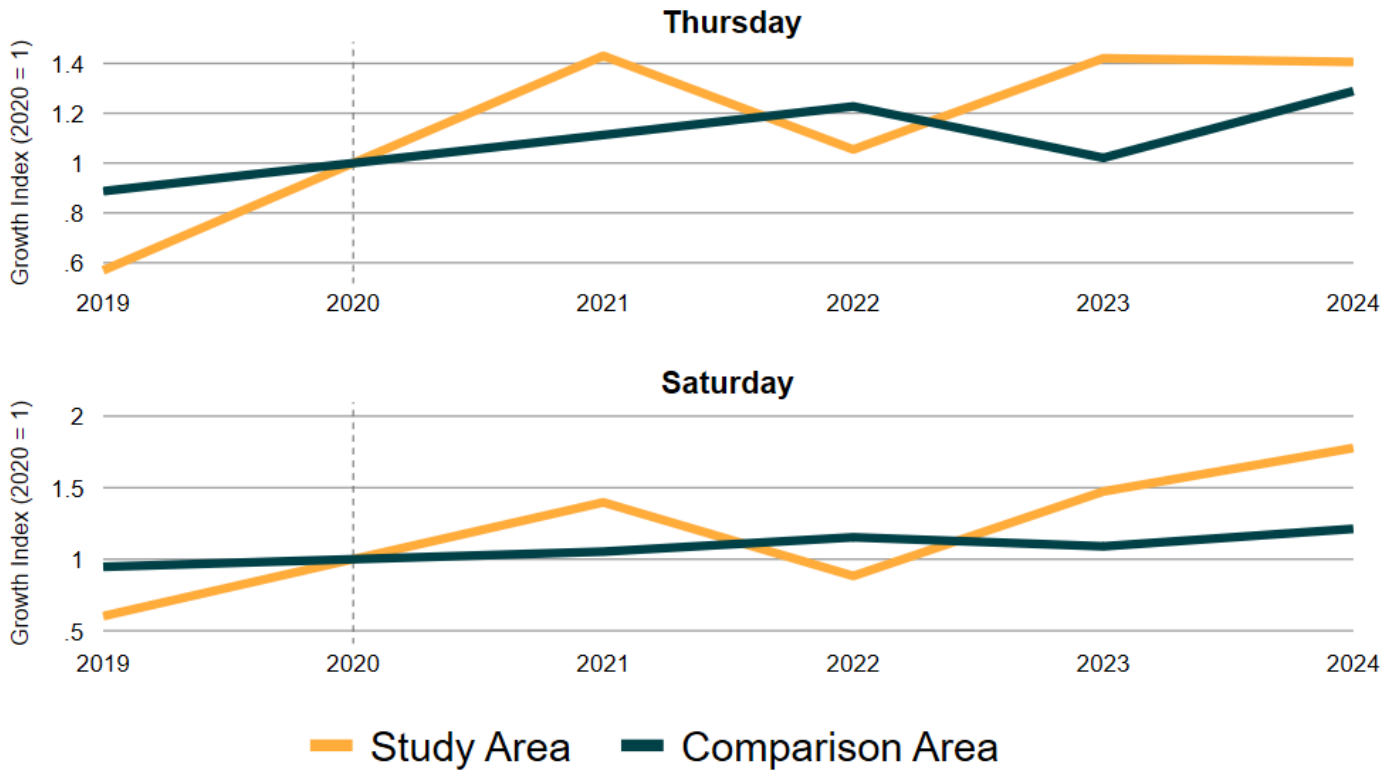
Source: City of Billings Building Permits Data.

Visitors

Because the Complete Street investment on Lake Elmo Drive was more recent than other case study areas, visitor data from Replica can be used for a before-after comparison, engendering difference-in-differences type analysis when combined with the comparison area assessment. As shown in Figure 3.4.4, the number of visitors to the Lake Elmo Drive corridor increased substantially between 2019 (prior to the striped bike lanes) and 2021 (after project completion). Besides a dip in visitors in 2022, the corridor continued to see a higher number of visitors in the post-implementation period. The decline in the number of trips observed in 2022 could be because Lake Elmo at the northern end of the corridor was drained in September 2021 and refilled more than six months later. While the comparison area also saw an increase in trips over the study period, the trend was substantially slower than the study area, suggesting some benefits from the Complete Streets implementation.

With few businesses along the corridor, the economic impacts of increased visitors are limited. Instead, these findings point to quality-of-life benefits for residents and visitors who can more easily travel and visit the city's parks and amenities.

Figure 3.4.4 Growth Rate in Trips to Lake Elmo and the Comparison Area



Source: Replica
Note: Replica data are not available for 2020 so the data that year are imputed. The spike in trips in 2021 could be related to a construction project on Main Street that year which could have caused diversions to Lake Elmo. The decline in the number of trips in 2022 could be because Lake Elmo at Lake Elmo State Park at the northern end of the corridor was drained in September 2021 and refilled more than six months later.

Safety and Multimodal Level of Service Impacts

Safety

Table 3.4.1 delineates the safety analysis performed for the Lake Elmo Drive corridor and its comparison, including the total number of crashes and the societal cost of these crashes based on the severity of the crashes, known as the "KABCO value". The table analyzes these societal crash costs in total, per year, and normalized by the annual traffic volumes the corridor experiences. As denoted in Table 3.4.1, the societal cost of the crashes along the study corridor was higher in both the pre-project and the post-project period than that of the comparison corridor. Interestingly, on the study corridor, there were more than double the number of crashes in the post-project period (57 crashes) than in the pre-project period (25 crashes), but the societal crash costs, when normalized based on traffic volumes, are only slightly higher ($215 in the pre-project period versus $251 in the post-project period – a 17 percent increase). In contrast, the cost per crash in the comparison area more than doubled between the pre and post period. This finding could indicate that the severity of the crashes has decreased, which may be attributable to the Complete Streets investment on the corridor.

Table 3.4.1 Pre-Project and Post-Project Societal Cost Values for Lake Elmo and Comparison Area

		Study Corridor	Comparison Corridor
Pre-Project Period	Data Years	2015-2019	2015-2019
	Number of Years	5	5
	Pre Improvement Crashes Total Crashes	25	29
	Crashes Per Year	5	5.8
	Total Societal Cost of Crashes (KABCO Value)	$4,150,100	$1,594,700
	Societal Cost of Crashes per Year (KABCO Value)	$830,020	$318,940
	Societal Cost of Crashes, Normalized by Traffic Volumes (AADT-Normalized KABCO Value*)	$215	$85
Post-Project Period	Data Years	2020-2024	2020-2024
	Number of Years	5	5
	Post Improvement Crashes Total Crashes	57	24
	Crashes Per Year	11.40	4.80
	Total Societal Cost of Crashes (KABCO Value)	$5,032,000	$2,832,100
	Societal Cost of Crashes per Year (KABCO Value)	$1,006,400	$566,420
	Societal Cost of Crashes, Normalized by Traffic Volumes (AADT-Normalized KABCO Value*)	$251	$195

*Based on average AADT per timeframe at a specific MDT Count location. Calculation is KABCO per year / Average of Year 1 AADT, Year 2 AADT, etc.

A crash modification factor (CMF) analysis was not performed for the Lake Elmo Drive corridor, as there were no associated CMFs available for the Complete Streets roadway treatments implemented as part of this project that corresponded to the applicable crash data.

Multimodal Level of Service

Table 3.4.2 compares the MMLOS for walking and bicycling, for the study and comparison corridors, in the post-project period. As shown below, the study corridor provides the same level of service for pedestrians and a better level of service for bicycles than the comparison corridor.

Table 3.4.2 MMLOS for Lake Elmo Drive and Comparison Area in the Post-Project Period

	Study Corridor	Comparison Corridor
Pedestrian Level of Service	B	B
Bicycle Level of Service	B	C

Summary of Findings

Overall, the evidence is inconclusive on the impacts of Complete Streets investment along Lake Elmo Drive:

- **Property Values:** While the study area slightly outperformed the comparison area by 2025, the evidence is not strong enough to point to impacts related to the Complete Street investment.
- **Building Permits (Development Activity):** Trends in building permit values in the study area almost exactly mirror trends in the comparison area. This finding does not point to strong impacts associated with the Complete Streets project.
- **Multimodal Access & Visitors:** While the comparison area also saw an increase in trips over the study period, the trend was substantially slower than the study area, suggesting some benefits from the Complete Streets implementation.
- **Safety:** While there were more crashes on the study corridor in the post-project period than in the pre-project period, the societal crash costs, when normalized based on traffic volumes, are only slightly higher, which could indicate that the severity of the crashes has decreased, potentially linked to the Complete Streets investment on the corridor.
- **Multimodal Level of Service:** Pedestrian and bicycle MMLOS was comparable or better for pedestrians and bicyclists on the study corridor.

Across multiple indicators, the corridor shows some positive impacts, whereas others show no or negative results.

4 Comparing Costs and Tax Revenue Impacts

This chapter seeks to put into context the costs of Complete Streets relative to the benefits, with a focus on the property value and subsequent tax revenue impacts.

First, maintenance costs per linear foot are calculated for both the study and comparison areas to better isolate the *additional* maintenance costs associated with Complete Streets projects. This distinction is important because, as discussed, nearly all streets in Billings include some level of Complete Streets elements (e.g., crosswalks) and therefore already incur baseline maintenance costs. As such, it is reasonable to assume that similar baseline costs would have been incurred along the study area corridors even in the absence of additional Complete Streets investments.

As shown in Table 4.1.1, pedestrian and bike infrastructure in the study areas costs more to maintain than the comparison area corridors, ranging from $0.66 to $0.91 additional cost per lineal foot. Applying these additional costs to the corridor length reflects the total additional maintenance cost for each study area.

Table 4.1.1 Bike and Pedestrian Maintenance Costs per Lineal Foot

	North 30th Street	Shiloh Road	Grand Avenue & 54th Street West	Lake Elmo Drive
Study Area				
Maintenance Costs	$12,500	$16,300	$10,300	$4,700
Length (Lineal ft)	6,178	13,076	8,758	4,382
Cost per Lineal foot)	**$2.02**	**$1.25**	**$1.18**	**$1.07**
Comparison Area				
Maintenance Costs	$6,300	$3,200	$2,600	$800
Length (Lineal ft)	4,940	5,438	6,290	4,904
Cost per Lineal foot)	**$1.28**	**$0.59**	**$0.41**	**$0.16**
Additional Maintenance Costs at the Study Area Corridors				
Difference in Cost per Lineal Foot	**$0.75**	**$0.66**	**$0.76**	**$0.91**
Additional Maintenance Costs Due to Added Complete Streets Elements	**$4,621**	**$8,605**	**$6,680**	**$3,985**

Complete Streets construction and additional maintenance costs over the life of the Complete Streets investments are shown in Table 4.1.2. These costs are compared against the property value impacts from each project to demonstrate how the costs compare to fiscal benefits. Property value impacts are calculated using a difference-in-differences analysis of the total (aggregate) property values along the corridor. In this analysis, the actual property values at the study areas are compared to a counterfactual estimate, reflecting how the properties *would have performed* in the absence of the Complete Streets investment. To construct this counterfactual, the growth rate from the comparison corridor is applied to the study area's "before" value, thus yielding an estimate of what the study area's property values *would be* had they grown at the same rate as the comparison area. For more detail on these calculations, see Appendix 2.

Subtracting these counterfactual estimates from the actual observed values at the study corridor results in the estimated Complete Streets impact on property values. In other words, the difference between the counterfactual estimate and the actual observed total property values provides an estimate of the total impact, or the difference in the differences. The values shown in the table, therefore, represent how much the total property values in the study corridors outperformed the comparison areas.

Table 4.1.2 Costs and Property Tax Revenue Impacts

	North 30th Street	Shiloh Road	Grand Avenue & 54th Street West	Lake Elmo Drive
Construction Costs	$26,000	$1,871,100	$461,700	$31,700
Annual Additional Maintenance Costs	$4,621	$8,605	$6,680	$3,985
Number of Years Post-Implementation	14	15	7	5
Total Costs (Construction and Annual Maintenance)	**$90,696**	**$2,000,181**	**$508,459**	**$51,626**
Actual Study Area Property Values	$3,042,163,197	$3,317,831,965	$1,475,380,033	$119,726,168
Counterfactual Study Area Property Values*	$2,060,237,127	$1,167,585,310	$937,619,975	$116,990,471
Complete Streets Property Value Impact	$981,926,070	$2,150,246,655	$537,760,058	$2,735,697
Tax Rate	1.20%	1.20%	1.20%	0.88%
Property Tax Impact (Total Since Construction)	**$11,783,113**	**$25,802,960**	**$5,925,180**	**$24,074**
Property Value Benefit Less Costs (Total Since Construction)	**$11,692,416**	**$23,802,779**	**$5,416,722**	**-$27,552**

Also shown in Table 3.4.2 are the associated tax impacts from the increase in property values. Tax impacts are not straightforward to calculate given the tiered tax rate for different property types and values. However, rough estimates using the lower end of the tax rate are applied as shown in the table. All areas except Lake Elmo Drive consider a midpoint between the residential (0.8 to 1.1 percent) and commercial (1.4 to 1.8 percent) tax rates. Alternatively, Lake Elmo Drive, which is largely a residential area, considers a tax rate of 0.88 percent, the lower end of the residential rate. Applying these rates to the additional property value impacts yields the property tax impact of associated with the additional growth in the study areas. As with other estimates in this report, these values are estimated based on several key assumptions and have associated

limitations. However, taken all together, the direction and range of tax impacts can be drawn. In this case, it is clear that the case study areas outperformed the comparison areas in terms of property values, which has led to substantial increases in property tax revenues each year.

Lastly, property tax benefits are compared to the total costs of the Complete Streets projects. As shown in the table, property tax gains far exceed project costs in all cases except Lake Elmo Drive, generating millions in net new revenue. Because these gains recur annually and substantially exceed ongoing maintenance costs, the net benefits grow over time. This time horizon is also important in understanding the Lake Elmo Drive results: having received Complete Streets improvements only in 2020, the corridor has not yet had sufficient time to generate property value increases large enough to offset its upfront costs. Even though the property value impacts were weaker in that study area, over time the small annual property value benefits at Lake Elmo Drive will lead to net gains. Further, the gap at Lake Elmo is minimal, costs exceed benefits by just $27,600 over the five years since construction, a negligible amount in the context of a municipal budget. Overall, these results provide supporting evidence that the **property tax benefits of Complete Streets outweigh the associated costs, even without considering benefits to business performance and other safety and community impacts.** Other monetary benefits from business growth, safety improvements, and quality of life not considered here would further offset construction and maintenance costs.

5 Quality of Life, Environmental, and Community Impacts

Other metrics, including quality of life and environment, did not have sufficient data to perform a full analysis. However, based on qualitative evidence, both benefit from Complete Streets investments, as illustrated below. In addition, stakeholder surveys were used to assess other community benefits.

5.1. Quality of Life Impacts of Complete Streets

Beyond measurable economic, safety, and multimodal service outcomes, Complete Streets investments also generate important quality of life benefits that shape how people experience and move through their community. The USDOT's Benefit–Cost Analysis Guidance (Tables A-8 and A-9) identifies a range of transportation benefits that are typically discussed qualitatively rather than monetized, including travel comfort, perceived safety, access to destinations, travel time reliability, and reduced travel stress.[7] While these outcomes are not easily expressed in dollar terms, they meaningfully influence travel behavior, corridor use, and the overall functioning of local transportation systems. In Billings, Complete Streets projects contribute to these recognized quality of life dimensions by improving the usability, comfort, and predictability of corridors for people walking, biking, taking transit, and driving.

Across the case study corridors, Complete Streets elements, such as sidewalks, multi-use trail, bicycle facilities, enhanced crossings, and roadway designs that calm traffic, improve connectivity and access to jobs, services, commercial areas, parks, and other daily destinations. These features support better overall travel experiences by lowering physical and perceptual barriers to short trips and by creating environments where multiple travel modes can operate more comfortably. In addition to traditional measures of congestion, USDOT's BCA framework emphasizes that quality of life benefits also arise from improvements in travel time reliability and reductions in delay-related stress, even where vehicle congestion is not fully eliminated. In this way, Complete Streets projects can improve how corridors function without relying solely on increases in vehicle capacity, reinforcing their role in supporting economically active and livable areas.

When considered alongside the economic, safety, environmental, and multimodal performance findings, these livability benefits help contextualize how Complete Streets investments contribute to long-term community function and economic vitality in Billings.

5.2. Environmental and Emissions Impacts of Complete Streets

Complete streets investments, like those outlined in the four case studies, can help reduce emissions by making walking, biking, and public transit safer and more convenient, which in turn decreases reliance on personal vehicles. By shifting trips away from automobiles, these investments reduce vehicle miles traveled and associated greenhouse gas emissions and air pollutants such as particulate matter and carbon monoxide. The USDOT's Benefit–Cost Analysis Guidance recognizes reductions in criteria air pollutants,

[7] U.S. Department of Transportation. (2025). *Benefit-cost analysis guidance for discretionary grant programs: 2026 update (final)*. Office of the Secretary. https://www.transportation.gov/sites/dot.gov/files/2025-12/Benefit%20Cost%20Analysis%20Guidance%202026%20Update%20%28Final%29.pdf

greenhouse gas emissions, and energy consumption as important outcomes of transportation projects, particularly where infrastructure supports shifts to walking, biking, or transit, shorter trips, and more efficient traffic flow. These environmental effects are typically indirect and incremental, reflecting changes in travel behavior and roadway performance over time rather than immediate, localized outcomes tied to a single project. As a result, USDOT notes that environmental benefits are often best understood as part of broader system-level performance rather than as precise corridor-level measurements.

Evaluating the environmental and emissions impacts of Complete Streets investments requires consistent, before-and-after multimodal travel data as well as a broader, system-level perspective. Such data were not available for this analysis; however, future work could better capture these impacts by collecting longitudinal data on pedestrian, bicycle, transit, and vehicle activity, alongside consideration of how individual projects function within an interconnected network. In this context, environmental benefits are best understood not as immediate, corridor-level outcomes, but as effects that accrue over time through sustained investment in connected infrastructure and complementary strategies that support long-term shifts in travel behavior and overall system performance.

5.3. Community Impacts

Beyond the real estate and economic impacts explored in the case studies, Complete Streets also lead to a variety of community benefits. These community benefits were explored through conversations with local stakeholder groups, including Downtown Billings Association, Living Independently for Today & Tomorrow (LIFTT), Big Sky Economic Development, Billings Chamber of Commerce, Shiloh Commons, and Intermountain Health. Each group offered a different perspective on how Complete Streets investments benefit Billings. Through these discussions, a few themes emerged, described in this section.

Quality of Life: Stakeholders confirmed that Complete Streets investments contribute meaningfully to quality of life in Billings by supporting the amenities that increasingly shape where people choose to live and work. As Big Sky Economic Development notes,

"Community Development is more important than ever because today over 65 percent of people choose where they want to live based on access to outdoor recreation, proximity to parks and trails, arts and cultural activities, and other community amenities. We want our community to be the number one choice!"

Source: Rattner, Mark. NonStop Local. New bike facilities open in downtown Billings for safer cycling.

Stakeholders emphasized that walkability is a key selling point in recruitment and retention efforts, particularly downtown. The Downtown Billings Association highlighted that being able to showcase a vibrant, pedestrian-friendly core helps attract both new residents and employers. When streets are safe and comfortable for

walking and biking, commuting options expand, daily errands become easier, and residents are more likely to enjoy and engage with their community.

Public Perceptions: Complete Streets investments shape how residents and visitors perceive and experience Billings. When streets feel safe and easy to navigate, whether on foot, by bike, via transit, or by car, they contribute to an overall sense that the city is welcoming and well-designed. Therefore, the Downtown Billings Association views Complete Streets investments as central to its mission and longstanding strategic priorities. As pedestrians and cyclists become more comfortable navigating downtown, they tend to spend more time exploring, dining, and shopping, experiencing the area as a destination rather than simply a corridor to pass through.

Stakeholders noted that improvements such as safer crossings, clearer connections across major corridors, and more visible pedestrian activity help reduce the sense of fragmentation created by high-traffic roadways. For visitors staying in local hotels, the ability to safely and easily walk to restaurants, shops, and attractions positively shapes their overall impression of the city. As more people feel comfortable walking, biking, or taking public transit, the city is experienced less as a collection of disconnected corridors and more as a cohesive, livable community.

Business Development: Stakeholders also identified important links between Complete Streets and business and real estate development. Slower vehicle speeds, safer crossings, and improved pedestrian infrastructure can support local business performance by increasing foot traffic and encouraging people to linger and explore. Walkable corridors are also more attractive places to live, making them appealing to residential developers as well. Areas with strong walkability and multimodal access are often the first to attract new development, particularly mixed-use and neighborhood-serving projects. For developers, Complete Streets connectivity is an important amenity that can increase demand and support a strong rental market. Tourism also depends on accessibility, particularly for visitors arriving by plane who may not have access to a car and rely on safe, walkable connections to parks, trails, and downtown amenities.

The Billings Chamber of Commerce understands the economic benefits of Complete Streets and has long been a proponent of alternative transportation networks in the city. The idea for the Marathon Loop, a 26.2-mile loop around the city that is currently 68 percent complete and includes the Shiloh Trail, initially came from the Chamber. The Chamber also ran a free bike rental operation from their facility for several years. These initiatives highlight Chamber's understanding of the importance of creating a trail ecosystem that facilitates commuting, recreation, and connectivity. The business organization sees these investments as a priority to retain residents, attract workforce, and support tourism and the broader economy.

Accessibility and Access to Critical Services: Accessibility emerged as a central theme in discussions with stakeholder groups, including Living Independently for Today & Tomorrow and Intermountain Health. Complete Streets improve mobility for people of all ages, incomes, and abilities, including pedestrians, cyclists, transit riders, and individuals using wheelchairs or other mobility devices. People with physical disabilities, older adults, youth, and lower-income residents are often more reliant on transportation options

beyond private automobiles, making safe routes to schools, workplaces, healthcare providers, and commercial areas essential.

Improved sidewalks, crossings, and transit access help residents reach medical appointments, pharmacies, and food retailers, particularly those without reliable vehicle access. For example, Billings' South Side lacks a grocery store, and a relatively high share of residents, many of whom have lower incomes, do not own private vehicles, making alternative transportation critical for food access. Retirement communities and the city's large youth population also benefit from safer, more connected streets. By prioritizing inclusive design, Complete Streets help ensure that essential destinations are accessible to all. Stakeholders noted that safe, direct routes to healthcare providers reduce transportation barriers and support better health outcomes. In a geographically expansive community like Billings, connecting key destinations safely strengthens both individual well-being and community resilience.

Events and Activities: Complete Streets also support community events and active lifestyles. Local trail advocacy group Billings TrailNet hosts several well-attended events throughout the year, celebrating the city's trail network and raising funds to invest in trail projects and amenities. These events include:

- Ales for Trails: A fundraising event that attracts 2,000 guests each year and features over 50 local and regional microbrews along with fine wine, non-alcoholic beverages, live entertainment, Silent Disco, Giant Beer Pong, raffles, and more. The event showcases how much Billings locals value the trail systems throughout the city.
- Tour de Fleur: A family and friends fun ride to celebrate spring. The roughly 200 riders decorate their bikes and adorn themselves with flowers and springtime swag before setting off.
- Heart & Sole Run: A Father's Day celebration including a 10K, 5K, and 2-mile race, several of which start at Intermountain Health St. Vincent Healthcare facilities on North 30th Street.

Source: Billings TrailNet. https://billingstrailnet.org/.

These events rely on safe, connected street networks and, in turn, bring visitors and spending to local businesses.

Healthy Living: By making walking and biking safer and more attractive, Complete Streets encourage regular physical activity and reinforce a culture of health. When residents can comfortably walk or bike to work,

school, parks, or local businesses, active transportation becomes part of daily routines rather than a special effort. Stakeholders emphasized that accessible sidewalks, bike facilities, and safe crossings encourage people of all ages to be more active, which contributes to improved physical and mental health outcomes. By designing streets that prioritize safety and connectivity, Billings creates an environment that supports long-term community health and well-being.

Connectivity: Finally, stakeholders consistently emphasized that connectivity is key. While Billings has pockets of walkability, these areas can function as isolated "islands" without continuous, safe connections between neighborhoods, schools, parks, and commercial districts. Some stakeholders also noted that commercial areas directly adjacent to Complete Streets, such as shopping centers and plazas, are not always designed with pedestrian and bicycle safety in mind. Without supportive policies, new development may not fully align with Complete Streets principles or nicely integrate with nearby Complete Steets infrastructure. Expanding and linking the active transportation network would amplify the benefits already observed, supporting students traveling to school, employees commuting to work, and residents accessing recreation and services. Strengthening these connections can unlock further economic, social, and health benefits, ensuring that Complete Streets investments deliver long-term value for the entire community.

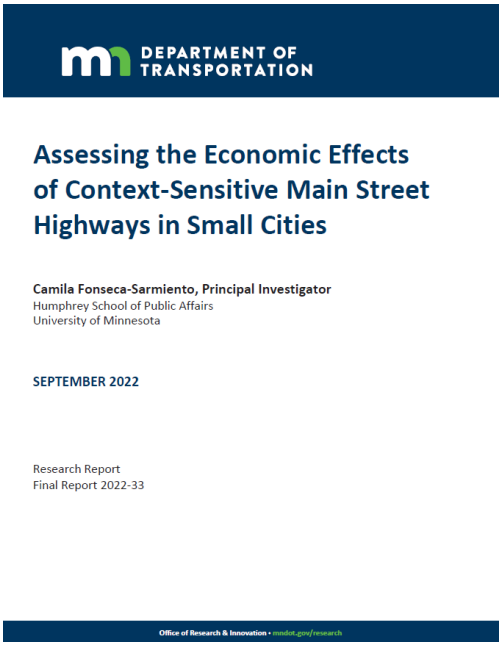
6 Case Studies in Other Areas

Other studies have observed the economic benefits of Complete Streets investments across the country. This chapter highlights four studies from around the US that also seek to understand the various impacts of Complete Streets investments. Information from these studies was used to refine methodological approach and data indicators used in this Billings study. Consistent with the findings from the analysis in Billings, these papers also illustrate the benefits of Complete Streets for communities, homeowners, and businesses.

6.1. Economic Effects of Main Street Highways in Small Cities in Minnesota

Overview

In a 2022 report titled *Assessing the Economic Effects of Context-Sensitive Main Street Highways in Small Cities,* author Camila Fonseca-Sarmiento from the University of Minnesota explores the economic impacts of Complete Streets projects in small cities across Minnesota.



Geography & Scope

This study examines nine small cities (ranging from populations less than 5,000 to almost 18,000) in Minnesota, focusing on Complete Streets reconstruction projects completed between 2015 and 2019.

Approach & Data

The authors use a mixed-methods design combining qualitative interviews with a difference-in-differences econometric model. Quantitative data include city-level gross sales, number of firms, and property values. Importantly, the Minnesota Department of Revenue was able to provide critical data on establishments and sales, making this detailed analysis possible. The model controls for key factors such as population density and median household income and compares corridors with Complete Streets elements to non-Complete Streets reconstruction areas.

Key Findings

- Complete Streets projects are associated with **increases in property values,** suggesting enhanced investment and tax base growth.
- **Gross sales showed positive but statistically insignificant changes,** indicating possible but uncertain business revenue impacts.
- **Number of business firms declined,** potentially reflecting consolidation (fewer but larger firms) rather than reduced economic activity.

Takeaways

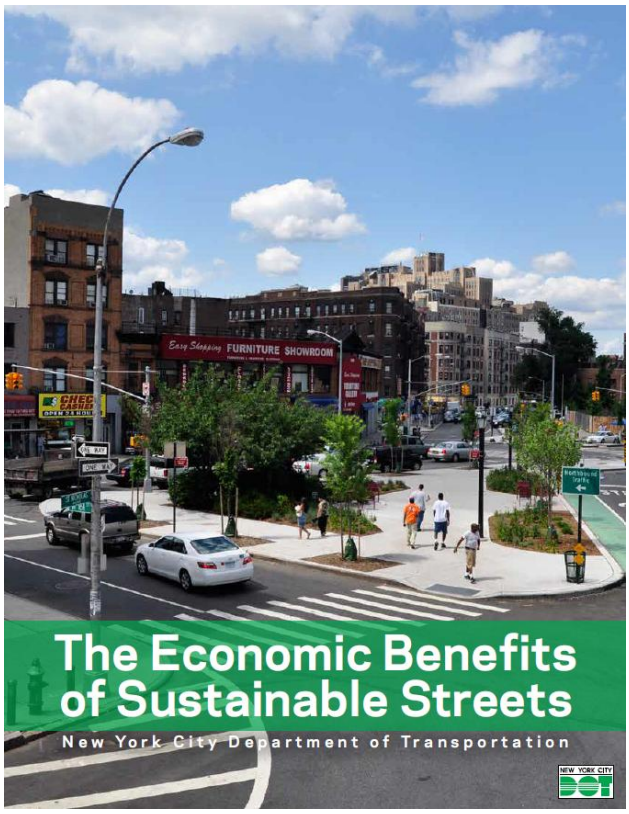
Overall, findings suggest modest but meaningful economic benefits, especially in real estate. This study provides a strong methodological framework, similar to the one implemented for the Billings analysis. Both studies use comparison groups and difference-in-differences modeling to isolate impacts, combined with stakeholder engagement.

This study in Minnesota highlights the importance of looking beyond firm counts to metrics like employment and sales to better understand economic shifts. This study in Billings faces similar challenges due to lack of data availability beyond business license counts.

6.2. The Economic Benefits of Sustainable Streets in New York City

Overview

A landmark analysis by the New York City Department of Transportation (NYC DOT) titled *The Economic Benefits of Sustainable Streets* examines whether street design improvements contribute to local economic vitality. Using a novel, data-driven methodology, the study provides compelling evidence that well-designed Complete Streets can generate measurable increases in retail sales while improving safety, mobility, and quality of life.



Geography & Scope

This study evaluates multiple street improvement projects in New York City, including pedestrian plazas, bike lanes, intersection redesigns, and bus rapid transit corridors. Seven projects implemented between 2006 and 2010 were analyzed across all five boroughs. These sites represent diverse neighborhood contexts, from regional shopping corridors to local main streets.

Approach & Data

NYC DOT, in collaboration with the NYC Department of Finance, developed a replicable methodology using aggregated sales tax data filed by street-level retail and food service businesses (NAICS 44–45 and 72). This study includes careful data cleaning to isolate impacts to brick-and-mortar, locally based businesses. Like the Billings study, a difference-in-differences approach is used, measuring:

- **Before-and-after** impacts comparing four baseline quarters to post-improvement periods (up to three years).
- **Differences from comparison sites** within the same neighborhood as well as boroughwide benchmarks to control for broader economic trends.

Key Findings

New York City's experience shows that safer, greener, more walkable streets can deliver measurable economic returns alongside transportation benefits. Across most sites, retail sales increased more rapidly on redesigned streets than in comparable locations, demonstrating that street improvements are associated with statistically significant increases in retail sales in project areas, including:

- Vanderbilt Avenue (Brooklyn), where retail sales more than doubled three years after improvements, outperforming boroughwide and most nearby corridors.
- St. Nicholas/Amsterdam Avenues (Manhattan), where sales rose 48 percent in two years, exceeding Manhattan's overall growth and outperforming comparison areas.
- Fordham Road (Manhattan & Bronx), where sales rose 71 percent despite removal of curbside parking during peak hours.

While not every project outperformed its borough, the vast majority did, and also beat nearby comparison streets, indicating that changes in street design contributed meaningfully to improved economic performance.

Takeaways

This study provides another direct and compelling measures of business impact, using actual sales data rather than proxies in areas with substantial commercial activity. Its rigorous methodology and clear findings make it highly relevant for evaluating corridor-level economic effects, especially for retail-focused areas.

The study demonstrates that 21st-century street design can be a catalyst for growth. Improvements that prioritize walking, biking, transit access, and high-quality public space can expand customer bases, increase foot traffic, and support small businesses across neighborhoods of varying income levels. Some important lessons learned from this work include:

- Retail sales data is a powerful, objective metric for evaluating economic impacts of street projects.
- Two years of post-implementation data is generally sufficient to detect economic effects.
- Pairing economic analysis with safety and mobility metrics strengthens the case for Complete Streets as an economic development strategy.

This methodology equips cities and towns with a robust tool to evaluate street investments, engage business communities, and integrate transportation design into broader economic development policy. Many of the principles and methods from this study are leveraged in the Billings analysis. However, because there are no sales taxes in Montana, collecting information on businesses revenues, one of the strongest indicators from the study in New York, was not possible.

6.3. An Economic Analysis of Complete Streets Policies in New Jersey

Overview

A 2016 thesis by Nicholas V Zanoni titled *An Economic Analysis of Complete Streets Policies in New Jersey* studies whether adopting Complete Streets policies leads to higher residential property values, using data from New Jersey municipalities. The analysis shows that these policies generate substantial economic value for local housing markets.

Geography & Scope
This study analyses 324 municipalities across the state of New Jersey, comparing those that adopted Complete Streets policies during the period 2009-2013 and those that did not. Home prices are observed for a two-year before and after period, allowing for causal inferences to be drawn from a difference-in-differences style analysis.

Approach & Data
To understand whether Complete Streets policies are linked to higher home values, this study compared New Jersey municipalities that adopted Complete Streets with similar municipalities that did not in order to employ a difference-in-differences analysis. Community profile information (population, travel patterns, income, housing stock, density, and location relative to New York City) was used to identify comparisons. Municipal average home sale price data across multiple years were used to observe trends before and after policies were adopted. The goal was to compare home price changes over time in places that adopted Complete Streets versus similar places that did not, so the results reflect the policy's likely contribution, not just general market differences.

Key Findings
The study highlights the benefits of Complete Streets adoption, finding:

- Home values rose by about $30,200 in municipalities that adopted Complete Streets policies, representing a roughly 7 percent increase compared with the average home price in the dataset (about $426,000).
- Municipalities without Complete Streets saw home values fall during the post-adoption period, while municipalities that adopted Complete Streets largely avoided that decline.

Takeaways
This study finds that Complete Streets can create economic value, suggesting that safer, more inclusive street design can deliver tangible economic returns. The study finds that improved street design can translate into higher housing demand and higher property values because people will pay more to live in areas that feel safer, more walkable, and better connected.

6.4. An Economic Summary on the Benefits of Complete Streets

Lastly, a 2021 white paper from the University of Nevada, Las Vegas reviewed academic research and real-world examples to assess how Complete Streets investments affect safety, mobility, and local economic outcomes.

From this literature review, safety outcomes are among the clearest benefits. Complete Streets designs, such as safer crossings, bike facilities, and traffic calming, are associated with large reductions in crashes and injuries. National evidence shows pedestrian-oriented street design can reduce crashes by up to 70 percent. In Reno, a Complete Streets project on Wells Avenue reduced total collisions by 45 percent and paid for itself in avoided injury and crash costs within a single year. This is especially relevant for Nevada, which ranks among the states with the highest pedestrian fatality rates.

Mobility and access improve as streets better accommodate walking, biking, transit, and driving. Studies reviewed in the paper show increases in pedestrian and bicycle activity following Complete Streets projects, often alongside stable or reduced vehicle travel. Better street connectivity shortens trip distances and

encourages people to shift from driving to walking or transit, improving access for older adults, people with disabilities, and households with limited access to cars.

Economic impacts extend beyond transportation. Research consistently shows that walkable, well-connected streets are linked to higher property values, stronger retail performance, and increased private investment. Walkability premiums have been observed across residential, office, and retail markets, and Complete Streets projects tend to create more jobs per dollar spent than traditional road-only investments. Case examples from other states show that street redesign projects can catalyze significant new business activity and tax revenue growth.

The study also notes important limitations for Nevada. Clark County's lower population density and high reliance on driving mean Complete Streets are most effective when targeted to areas with existing or emerging density, such as university corridors, downtowns, employment centers, medical districts, and tourist areas. Safety and maintenance are also critical; without them, streets may not attract sustained use.

The evidence suggests Complete Streets can deliver meaningful safety improvements and economic benefits when implemented strategically. Focusing investments in higher-activity areas can help ensure these projects improve mobility while supporting local economic development, a finding particularly relevant for the Billings context. Like many areas in Nevada, Billings tends to be auto dependent and relatively sprawled. Focusing investment on denser areas or important intracity linkages will engender the largest impacts.

7 Summary of Findings and Next Steps

This analysis finds compelling evidence that Billings' Complete Streets investments are leading to positive impacts for the city in a variety of ways. As discussed throughout this study, individual results can be influenced by confounding factors or limited by data availability. Instead, the results of these four case studies should be considered together.

7.1. Economic and Real Estate Impacts

Table 7.1.1 summarizes the high-level findings from the comparative analysis. In almost all cases, particularly for indicators with high-quality reliable data (i.e., property values and businesses licenses) the data generally point to positive impacts:

- Three of the four case studies, and all with commercial properties, demonstrated **substantial positive impacts of Complete Streets investments on property values**. This finding suggests that investing in safe, accessible, and multi-modal streets benefits property owners. These property value benefits, in turn, lead to higher property tax levies, which can help cover the costs associated with Complete Streets construction and maintenance. As outlined in this study, **the magnitude of property value increases associated with the Complete Streets investments outweigh the associated costs, even without considering benefits to business performance and other safety and community impacts.** Other monetary benefits from business growth, safety improvements, and quality of life not considered here would further offset construction and maintenance costs.
- Similarly, business license analysis suggests that **Complete Streets investments can have positive impacts on business activity**. In two of the three case studies that include this indicator, there is strong evidence supporting the hypothesis that increased accessibility leads to greater business activity. At Grand Avenue & 54th Street West, business license data also point to some positive impacts, though these benefits were limited due to the onset of Covid-19.

Table 7.1.1 Summary of Economic, Real Estate, and Business Impacts

Case Study Area	Property Values	Building Permits*	Visitors*	Business Licenses
North 30th Street	Strong Positive Evidence	Inconclusive Evidence	Strong Positive Evidence	Strong Positive Evidence
Shiloh Road	Strong Positive Evidence	Some Positive Evidence	Some Negative Evidence	Strong Positive Evidence
Grand Ave & 54th Street West	Strong Positive Evidence	Limited/No Difference	Some Negative Evidence	Some Positive Evidence
Lake Elmo Drive	Limited/No Difference	Limited/No Difference	Strong Positive Evidence	N/A

*Note: Due to lack of data availability and limitation of data reliability, these indicators are not considered as strong as the others. For all case studies except Lake Elmo Drive, the visitor analysis only considers the share of total visitors to the corridor and comparison traveling by bike, walking, or riding transit. At Lake Elmo Drive, where before and after data are available, the analysis considers before and after comparisons as well as performance relative to the comparison area.

Building permits and Replica visitor data are considered weaker indicators:

- In the case of building permits, for older projects the data only include the number of permits, not the value. Further, the mechanism through which Complete Streets impact building permits is less clear than other indicators and impacts may be lagged. For example, a Complete Street investment might lead to increased visitors, and as a result increased business activity. After a period of sustained higher performance, the business owner may decide to make investments to improve the building. These impacts therefore have a less straightforward path of impact, and impacts may be delayed, making this a less reliable and useful indicator. The **findings from the building permits indicator are inconclusive**, with most case studies showing limited or no impact.
- Similarly, visitor data is also limited in several ways. For most case study areas, these data are not available for a pre/post analysis. In these cases, this study only assessed the share of users by mode relative to the comparison area. Further, these data come from a simulated model, rather than an actual count, making the data may be less reliable, particularly for smaller areas or corridors. At Lake Elmo Drive, the one case study where before and after data are available, the visitor data point to positive impacts associated with Complete Streets. In other cases, the results are mixed. Because analysis in these other case studies does not include any time element, the **data and evidence are not strong enough to draw meaningful conclusions about visitor impacts**.

7.2. Safety and Multimodal Level of Service Impacts

Due to a lack of data availability for the pre-project and post-project periods, the analysis revealed **mixed results in terms of the safety impact** that Complete Streets investments have on surrounding areas. However, there is a **clear demonstration of increased level of service** for pedestrians and cyclists following the implementation of Complete Streets projects.

Table 7.2.1 Summary of Safety and Multimodal Level of Service Impacts

Case Study Area	Safety (Societal Cost of Crashes)	Multimodal Level of Service
North 30th Street	N/A	Better for Pedestrians and Bicyclists
Shiloh Road	N/A	Inconclusive Evidence: Comparable or worse for pedestrians and bicyclists, due to posted speed limit
Grand Ave & 54th Street West	Inconclusive Evidence: Increase due to crashes unrelated to complete streets	Better for Pedestrians and Bicyclists
Lake Elmo Drive	Slight increase, but potentially less severe crashes	Comparable or Better for Pedestrians and Bicyclists

One reason for the limited safety findings is that, while there is overlap between the guiding principles of Complete Streets and the guiding principles of the Safe System Approach, these two transportation efforts do

not entirely overlap, which can result in Complete Streets projects that do not include targeted roadway safety infrastructure, and vice versa. To better align these efforts, and experience a greater reduction in the societal costs of crashes, the City of Billings and the Billings-Yellowstone County must continue to endeavor to progress projects that address specific safety concerns, particularly where fatal and serious injury crashes have occurred or locations that are at risk for these types of crashes to occur. Further, including Proven Safety Countermeasures[8] and treatments included in the Safe System Roadway Design Hierarchy[9] in Complete Streets projects will ensure safety benefits are fully realized.

7.3. Conclusions and Next Steps

Despite the limited data, this analysis points to strong evidence that Complete Streets investments increase property values, support business growth, and improve quality of life and accessibility. Results from outreach with local stakeholders confirm the community benefits associated with Complete Streets, including public perceptions, accessibility, business development, connectivity, and access to critical services. These qualitative findings complement the quantitative analysis, helping to capture impacts that are not always reflected in available data.

Concerns persist among some Billings residents and business owners that Complete Streets investments may not represent the best use of public funds. However, the findings presented here indicate that increases in property tax revenues more than offset construction and maintenance costs within a relatively short timeframe. Overall, the evidence indicates that Complete Streets investments are a viable approach to advancing economic development, enhancing quality of life, and fostering a more connected and resilient community, with continued investment likely to amplify these outcomes over time.

The qualitative analysis focuses on the available metrics used to assess the economic and community impacts of Complete Streets investments. At the same time, there are additional ways these investments may benefit a community, along with other indicators that could help illustrate those impacts. Based on a review of similar studies across the US, the City of Billings and the Billings-Yellowstone County MPO could improve future studies and strengthen the findings of this study by collecting specific data before and after Complete Streets projects are implemented, including:

- **Multimodal traffic counts:** Accurate counts of corridor visitors by mode before and after project implementation. This data can also help support analysis of environmental impacts as user modes shift.
- **Crash data:** Changes in the frequency and severity of crashes before and after implementation can help assess safety impacts for all roadway users.
- **Business sales:** Typically provided by the relevant department of revenue, this offers one of the most direct measures of business performance, though can be challenging to collect due to data release restrictions.
- **Employment counts:** The number of employees can indicate whether improved business performance translates into job growth.

[8] US DOT Federal Highway Administration. Proven Safety Countermeasures. https://highways.dot.gov/safety/proven-safety-countermeasures.
[9] US DOT Federal Highway Administration. Safe System Roadway Design Hierarchy. https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf

- **Survey of corridor users:** Public perception surveys can help capture perceived safety and provide alternative evidence to account for some of the limitations in the MMLOS data (e.g., not differentiating benefits between multi-use trail and sidewalk).

Ongoing data collection and performance monitoring will help the City better understand long-term outcomes and refine future investments.

While the City has made substantial investments in Complete Streets infrastructure, gaps in the network remain that can make it difficult to travel to and from certain areas. As the network becomes more interconnected and better integrated with local shopping centers and key destinations, the potential benefits will be strengthened, improving accessibility, safety, and overall economic impact. Continued investment in closing these gaps, particularly in areas with limited access to safe, multimodal options, will be critical to maximizing the return on prior improvements.

Taken together, the findings of this study highlight the wide range of benefits associated with Complete Streets and suggest that continued investment will further expand these benefits as Billings becomes more safe, connected, and vibrant.

Appendices

Appendix 1 Maintenance Costs Detail

Below is a list of the general activities involved in maintaining various street elements. This list may not be exhaustive, and does not include more long-term maintenance such as sealing or repaving asphalt.

- Motor vehicle lanes
    - Sweeping
    - Lane restriping
    - Snow removal
- Bike lanes
    - Striping
    - Repainting bike lane symbols
    - Sweeping
    - Snow removal
- Multi-Use trails
    - Plowing
    - Spraying for weeds
    - Weed removal
    - General trail maintenance
    - Mowing
    - Sweeping
    - Snow removal
- Neighborhood bikeways
    - Replacing bike shared lane markings with heat tape, approximately every 10 years
- Regular or high visibility crosswalks
    - Replacement and repair of Rectangular Rapid Flashing Beacons (pedestrian activated flashing lights), if present
    - Repainting crosswalks
- Pedestrian Median Islands
    - Sweeping
    - Snow removal
    - Replacing delineators (if present)
    - Spraying with water to clean
    - Repainting curbs
    - Spraying for weeds
- Curb extensions
    - For attached curb extensions
        - Paint yellow on curb extensions, approximately every 7-10 years

    - For detached curb extensions
        - Paint yellow on curb extensions, approximately every 7-10 years
        - Clean off twice per year, including between the curb extension and the regular curb
- Sidewalks
    - Most sidewalks maintained by property owners
    - There are a few roads where Street and Traffic maintains the boulevard next to the sidewalk

Below are detailed tables of the maintenance costs at each case study corridor.

North 30th Street Maintenance Costs

Table A.1.1 North 30th Street Complete Streets Maintenance Costs - Detailed Breakdown

Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$7,700
Street Repair for Bike Lane	$2,500
Bike Lane	
- Sweeping	$100
-Snow removal	$200
-Bike lane restriping	$1,800
-Bike lane symbol painting	$200
Total	**$12,500**

Table A.1.2 North 30th Street and Comparison Area Vehicular Elements Maintenance Costs

N. 30th St. from Grandview to Montana (~3,183 linear ft of bike lane and 6178 linear ft of roadway)	
Activity/Item	Estimated Annual Cost
Restriping	$400
Sweeping	$2,300
Snow Removal	$3,700
Long-term Street Repair	$11,600
Total	**$18,000**
N. 32nd St. from Parkhill to Montana (Approximately 4,940 linear ft)	
Activity/Item	Estimated Annual Cost
Restriping	$300
Sweeping	$1,800
Snow Removal	$3,000
Long-term Street Repair	$11,700
Total	**$16,800**

Shiloh Road Maintenance Costs

Table A.1.3 Shiloh Road Complete Streets Maintenance Costs - Detailed Breakdown

Activity /Item	Estimated Annual Cost
Pedestrian Refuge Islands	$300
Crosswalk Repainting	$8,700
Slurry Seal	2,900
Multi-Use Trail (broken out by the items listed below)	
-Sweeping	$1,400
-Snow removal	$800
-Mowing/weeding	$500
-Spraying for weeds	$1,100
-Generic trail maintenance	$600
Total for street	**$16,300**

Table A.1.4 Shiloh Road and Comparison Area Vehicular Elements Maintenance Costs

Shiloh Rd. – Broadwater Ave. to Hesper Dr. (~13,076 lineal ft)	
Activity/Item	Estimated Annual Cost
Restriping	$4,600
Sweeping	$9,800
Snow Removal	$16,000
Long-term Street Repair	$37,800
Total	**$68,200**
24th St. W. – Central Ave. to King Ave. (~5,438 lineal ft)	
Activity/Item	Estimated Annual Cost
Restriping	$1,200
Sweeping	$5,000
Snow Removal	$8,200
Long-term Street Repair	$25,200
Total	**$39,600**

Grand Avenue & 54th Street West Maintenance Costs

Table A.1.5 Grand Avenue & 54th Street West Complete Streets Maintenance Costs - Detailed Breakdown

Activity/Item	Estimated Annual Cost
RRFBs (Pedestrian Activated Flashing Light at Crossing)	$800
Crosswalk Repainting	$3,500
Slurry Seal	$1,900
Multi-Use Trail (broken out by the items listed below)	
-Sweeping	$1,400
-Snow removal	$1,000
-Mowing/weeding	$400
-Spraying for weeds	$700
-Generic trail maintenance	$600
Total	**$10,300**

Table A.1.6 Grand Avenue & 54th Street West and Comparison Area Vehicular Elements Maintenance Costs

Grand Ave. from 52nd to Wilderness and 54th from Grand to Rimrock (~8,758 lineal ft)	
Activity/Item	Estimated Annual Cost
Restriping	$2,000
Sweeping	$4,800
Snow Removal	$7,900
Long-term Street Repair	$35,600
Total	**$50,300**
Grand Ave. from 24th St. W to 32nd St. W (Approximately 6290 lineal ft)	
Activity/Item	Estimated Annual Cost
Restriping	$1,400
Sweeping	$3,500
Snow Removal	$5,700
Long-term Street Repair	$34,000
Total	**$44,600**

Lake Elmo Drive Maintenance Costs

Table A.1.7 Lake Elmo Drive Complete Streets Maintenance Costs - Detailed Breakdown

Activity/Item	Estimated Annual Cost
Crosswalk Repainting	$500
Chip Seal for Bike Lanes	$1,300
Bike Lane	
- Sweeping	$200
-Snow removal	$300
-Bike lane restriping	$2,000
-Bike lane symbol painting	$300
Total	**$4,700**

Note: Values may not exactly sum to totals due to rounding.

Table A.1.8 Lake Elmo Drive and Comparison Area Vehicular Elements Maintenance Costs

Lake Elmo Dr. from Wicks Ln. to Robertson Rd. (~ 4,382 linear ft)	
Activity/Item	Estimated Annual Cost
Restriping	$200
Sweeping	$1,600
Snow Removal	$2,600
Chip Sealing	$6,600
Total	**$11,000**
Babcock Blvd. from Governors Blvd. to Wicks Ln. (~4,904 linear ft)	
Activity/Item	Estimated Annual Cost
Restriping	$300
Sweeping	$1,800
Snow Removal	$2,900
Chip Sealing	$9,600
Total	**$14,600**

Appendix 2 Property Tax Revenue Impacts

This appendix section provides further detail on the difference-in-differences analysis completed to support Chapter 4 Comparing Costs and Tax Revenue Impacts.

Table A.2.1 Property Value Impacts at North 30th Street

	TOTAL COST	Actual Study Area Property Values	Counterfactual Study Area Property Values	Complete Streets Property Value Impact	Property Tax Benefit
2011	$26,027			$0	$0
2012	$4,621	$150,161,922	$123,853,734	$26,308,188	$315,698
2013	$4,621	$150,161,922	$123,853,734	$26,308,188	$315,698
2014	$4,621	$148,122,709	$122,057,633	$26,065,076	$312,781
2015	$4,621	$180,402,851	$136,764,081	$43,638,770	$523,665
2016	$4,621	$212,682,994	$151,470,530	$61,212,464	$734,550
2017	$4,621	$204,576,338	$142,469,166	$62,107,173	$745,286
2018	$4,621	$235,862,383	$144,163,481	$91,698,902	$1,100,387
2019	$4,621	$249,914,624	$149,307,365	$100,607,260	$1,207,287
2020	$4,621	$248,768,758	$147,943,439	$100,825,320	$1,209,904
2021	$4,621	$237,103,751	$147,891,064	$89,212,686	$1,070,552
2022	$4,621	$219,945,257	$144,005,199	$75,940,058	$911,281
2023	$4,621	$253,883,562	$169,768,579	$84,114,982	$1,009,380
2024	$4,621	$268,153,229	$175,485,900	$92,667,328	$1,112,008
2025	$4,621	$282,422,896	$181,203,222	$101,219,674	$1,214,636
TOTAL	**$90,723**	**$3,042,163,197**	**$2,060,237,127**	**$981,926,070**	**$11,783,113**
Benefit Less Costs	**$11,692,389**				

Note: Property value data for 2012, 2015, and 2024 were not available and are imputed in the table.

Table A.2.2 Property Value Impacts at Shiloh Road

	TOTAL COST	Actual Study Area Property Values	Counterfactual Study Area Property Values	Complete Streets Property Value Impact	Property Tax Benefit
2010	$1,871,100				
2011	$8,605	$165,610,468	$81,241,477	$84,368,991	$1,012,428
2012	$8,605	$173,000,265	$80,323,490	$92,676,775	$1,112,121
2013	$8,605	$180,390,062	$79,405,503	$100,984,559	$1,211,815
2014	$8,605	$183,703,656	$78,122,943	$105,580,713	$1,266,969
2015	$8,605	$191,751,850	$81,112,049	$110,639,801	$1,327,678
2016	$8,605	$199,800,044	$84,101,154	$115,698,890	$1,388,387
2017	$8,605	$196,661,206	$82,132,048	$114,529,158	$1,374,350
2018	$8,605	$211,873,344	$79,778,431	$132,094,913	$1,585,139
2019	$8,605	$217,233,400	$80,480,237	$136,753,164	$1,641,038
2020	$8,605	$232,961,862	$79,666,628	$153,295,234	$1,839,543
2021	$8,605	$232,038,099	$77,720,272	$154,317,827	$1,851,814
2022	$8,605	$218,471,385	$69,792,251	$148,679,135	$1,784,150
2023	$8,605	$273,799,930	$72,848,789	$200,951,141	$2,411,414
2024	$8,605	$304,778,775	$71,236,276	$233,542,499	$2,802,510
2025	$8,605	$335,757,619	$69,623,763	$266,133,856	$3,193,606
TOTAL	**$2,000,181**	**$3,317,831,965**	**$1,167,585,310**	**$2,150,246,655**	**$25,802,960**
Benefit Less Costs	**$23,802,779**				

Note: Property value data for 2012, 2015, and 2024 were not available and are imputed in the table.

Table A.2.3 Property Value Impacts at Grand Avenue & 54th Street West

	TOTAL COST	Actual Study Area Property Values	Counterfactual Study Area Property Values	Complete Streets Property Value Impact	Property Tax Benefit
2018	$461,700				
2019	$6,680	$171,940,925	$122,194,774	$49,746,152	$596,954
2020	$6,680	$169,664,462	$120,720,822	$48,943,640	$587,324
2021	$6,680	$170,880,552	$118,644,569	$52,235,983	$626,832
2022	$6,680	$160,905,180	$109,770,064	$51,135,115	$613,621
2023	$6,680	$196,669,749	$115,460,640	$81,209,109	$974,509
2024	$6,680	$213,243,079	$116,008,363	$97,234,716	$1,166,817
2025	$6,680	$229,816,409	$116,556,086	$113,260,323	$1,359,124
TOTAL	**$508,459**	**$1,313,120,357**	**$819,355,319**	**$493,765,038**	**$5,925,180**
Benefit Less Costs	**$5,416,722**				

Note: Property value data for 2024 were not available and are imputed in the table.

Table A.2.4 Property Value Impacts at Lake Elmo Drive

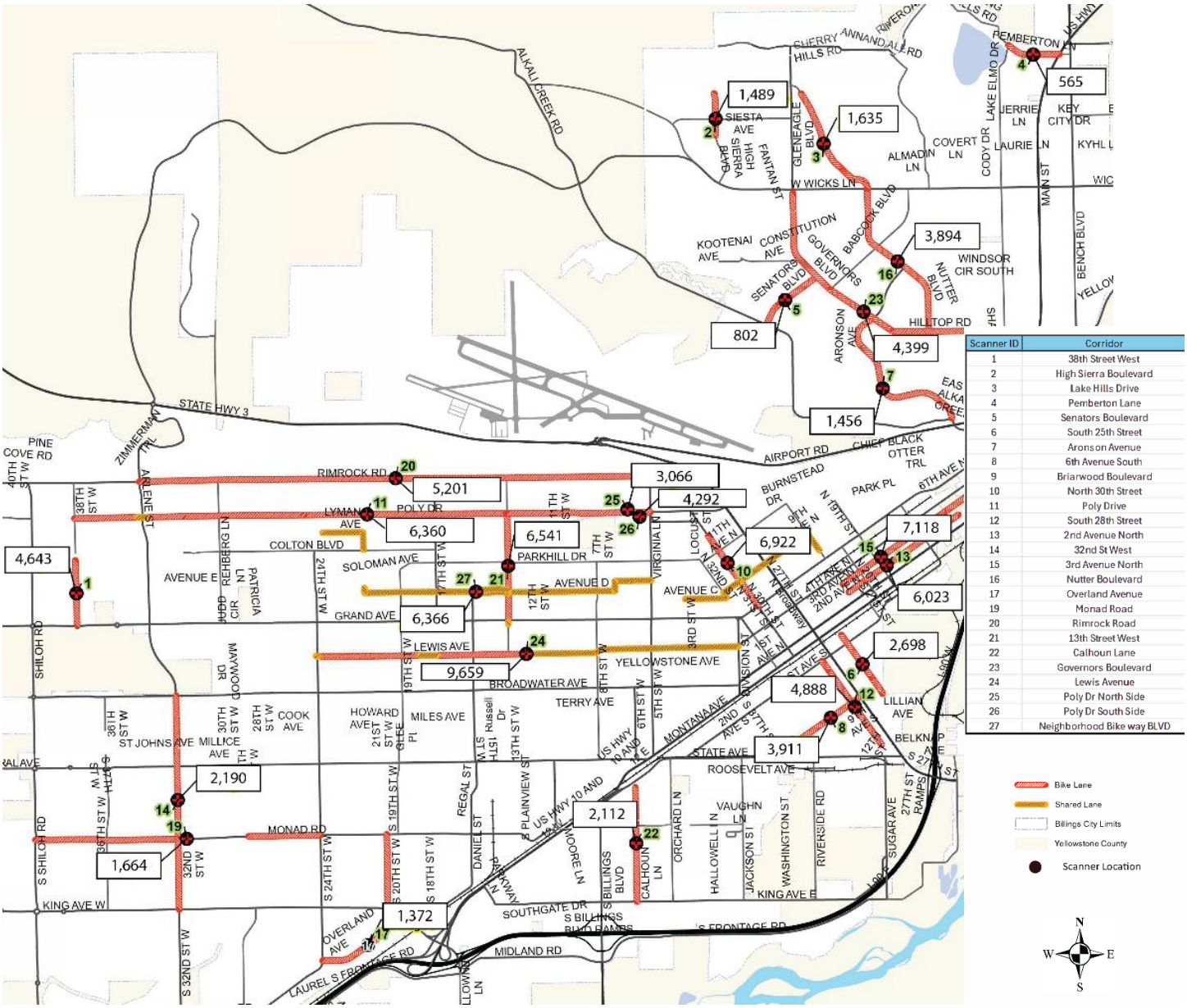
	TOTAL COST	Actual Study Area Property Values	Counterfactual Study Area Property Values	Complete Streets Property Value Impact	Property Tax Benefit
2020	$31,700				
2021	$3,985	$21,457,235	$21,173,949	$283,285	$2,493
2022	$3,985	$19,859,052	$19,606,204	$252,848	$2,225
2023	$3,985	$25,223,805	$24,924,602	$299,203	$2,633
2024	$3,985	$26,136,627	$25,403,439	$733,188	$6,452
2025	$3,985	$27,049,450	$25,882,277	$1,167,173	$10,271
TOTAL	**$51,626**	**$119,726,168**	**$116,990,471**	**$2,735,697**	**$24,074**
Benefit Less Costs	**-$27,552**				

Note: Property value data for 2024 were not available and are imputed in the table.

Appendix 3 Annual Bikeway and Trail Count Maps

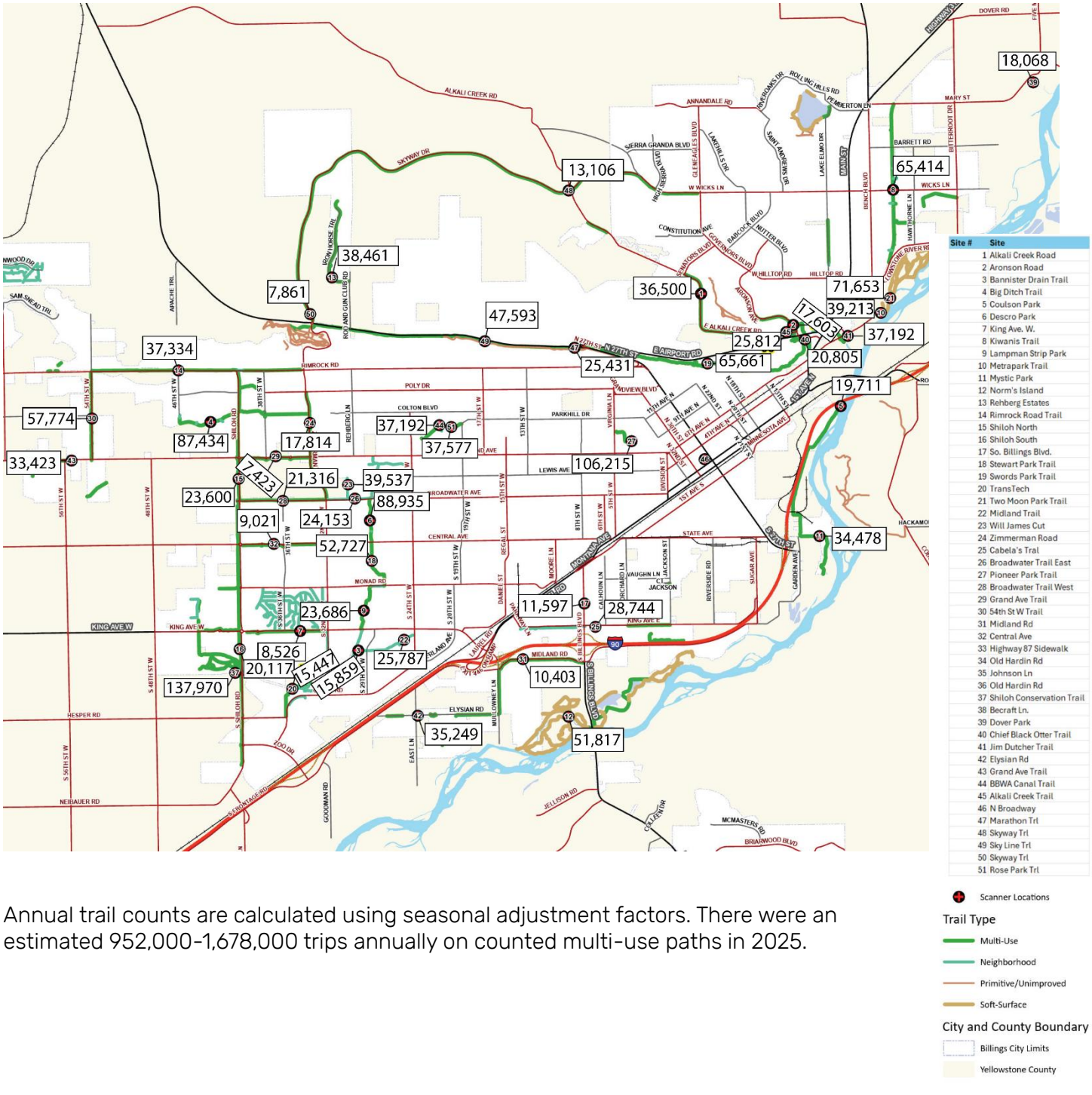
The maps below give an estimate of annual bikeway and trail usage. Estimates are calculated using seasonal adjustment factors.

Figure A.3.1 Annual Estimated Bike Lane Counts



Annual bike lane counts are calculated using seasonal adjustment factors. There were an estimated 79,000-107,000 rides annually on counted bike lanes in 2025.

Figure A.3.2 Annual Estimated Trail Counts



Annual trail counts are calculated using seasonal adjustment factors. There were an estimated 952,000-1,678,000 trips annually on counted multi-use paths in 2025.

Appendix 4 Additional Cost Estimates

The cost estimates below were calculated in 2025. They are based on recent bids for other projects and may differ from the exact cost for any one specific case study.

Table A.4.1 Street Construction Cost Estimates

	Cost Estimate	Notes
Vehicular Lanes	$10-$15 per SF of roadway	Does not include curb and gutter
Pedestrian Refuge Island	$15,000-$17,000 each	
Median Islands	$40-$140 per SF	
Accessible Pedestrian Signals	$11,000 to $23,000 per signal	
Sidewalk	$15-$20/SF	
Streetlights	$75-$100/LF of street	
Boulevard and Median Landscaping	Grass Landscaping	$5-$7 per SF
	Shrubs/Planters	$15-$30 per SF
	Trees (2” caliper) with irrigation	$600-$750 EA
Neighborhood Bikeway	$62,700 per mile	
Bike Lanes	$88,320 per mile	
Buffered Bike Lanes	$124,000 per mile	
Separated (Protected) Bike Lane	$1523,000 per mile	
Asphalt Multi-Use Trail	$554,000 per mile	
Concrete Multi-Use Trail	$1,487,000 per mile	
Marked Crosswalk	$21,000 per crosswalk	
Marked crosswalk with Rectangular Rapid Flashing Beacon	$60,000 per crosswalk	
Marked Crosswalk with Pedestrian Hybrid Beacon	$281,000 per crosswalk	
Intersection Reconstruction with Bulbouts	$177,000 per intersection	