



Key Takeaways

- By estimating the sales price premium home-buyers place on their home's distance to the nearest bike lane, a partial valuation can be established for individual bike lanes.
- The model developed for this study estimates there is a \$4.64 premium on the price of a home for every meter closer that home is to the closest bike lane.
- The values of three Knoxville bike lanes were estimated: N. Central Street (E. Churchill Street to E. Morelia Avenue) at \$1.1 million; Liberty Street at \$2.7 million; and University Avenue at \$0.8 million. The relative consistency of these estimates implies the framework is not biased.
- This framework does not take into account other factors that may alter value such as bike lane type, recreation and health benefits, and economic activity generated by the bike lane's presence.

HOW VALUABLE ARE BIKE LANES?

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As concerns about sustainability and transportation equity have grown in the public consciousness, more and more communities have been pushing for bike infrastructure development. This popular support has resulted in swift growth in bike infrastructure across the country in recent years. As this development occurs, it is becoming more important to develop quantitative measures for valuing bike lanes. Due to the nature of bike lanes, however, this is difficult. As public amenities built and maintained by local government, bike lanes do not exist as a traditional market good. Without the price signals a market provides, it can be difficult to quantify the added value bike lanes bring to a community or assess the social benefits of public investment in bike infrastructure. This study seeks to address this issue by evaluating proximity to the nearest bike lane as a component of home prices. We use this approach to value three bike lanes in Knoxville, Tennessee.

The first step in this framework is estimating how proximity to bike lanes affects individual home prices. To do this, a hedonic regression analysis was performed utilizing 97,142 home sales as data points. These homes are located across Knox County. All sales were made between 2001 and 2021, and final sales prices were adjusted for inflation.

The goal of this analysis was to create a model to predict home prices with linear distance to nearest bike lane as the variable of interest. The development of this model is displayed in **Figure 1**. After the inclusion of pertinent control variables, a final model was created. From this final model, it was determined that, all else being equal, a given home could expect a \$4.64 increase in sales price for every meter closer it was to the nearest bike lane. This result was statistically significant.

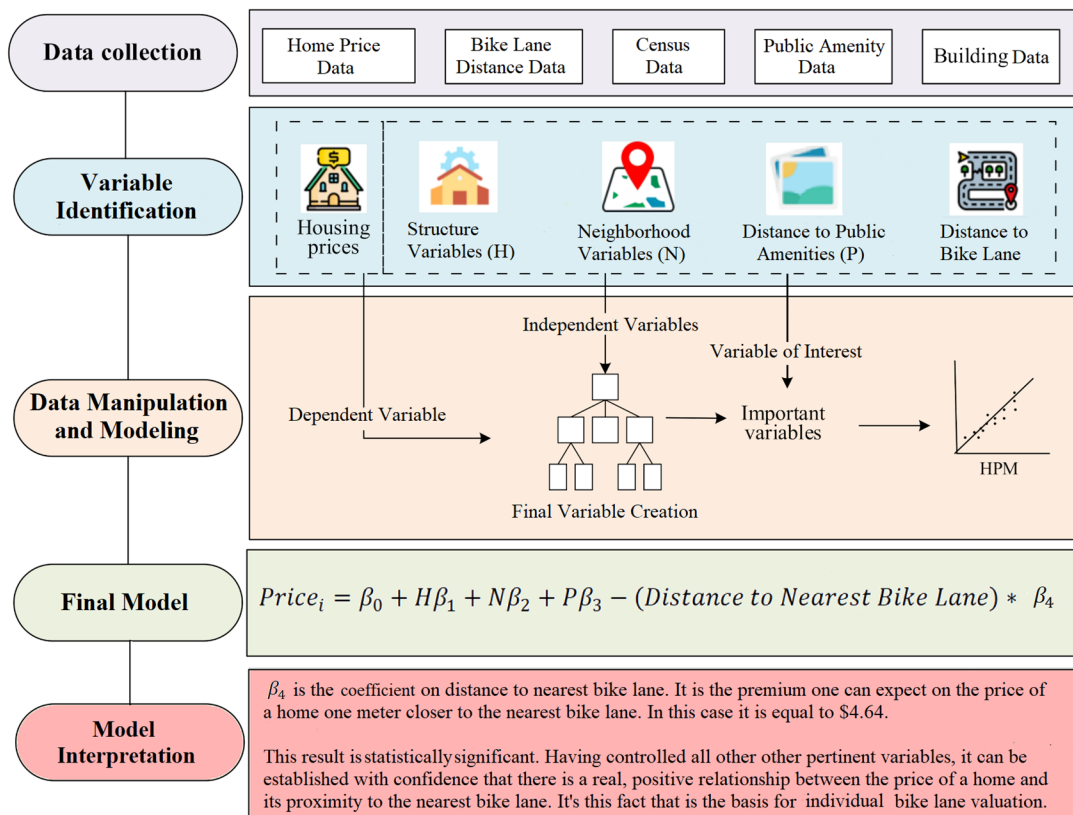
The next step in this framework was to analyze how the installation of a new bike lane decreased the distance to nearest bike lane for all homes in the area. For every home associated with the new bike lane (every home for which the new bike lane is the closest bike lane) the distance to the second closest bike lane (previously closest bike lane) was determined. The difference between the distance to the new closest bike lane and old closest bike lane was then

Growing support for bike infrastructure makes it important to develop quantitative measures of its value.

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Figure 1. Model Development



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calculated and summed for every given home. This process is displayed in **Figure 2**. This resulted in a value for the total increase in proximity after the installation of a new bike lane.

The final step in this framework was to take the total increase in proximity for a given bike lane and multiply it by the model estimate of \$4.64. This result was the total expected increase in home values attributable to the installation of that bike lane. It was this value that was considered as the estimated value of the new bike lane.

This framework was applied to three different bike lanes in Knoxville, N. Central St (E. Churchill Ave to E. Morelia Ave) built in 2019, Liberty St built in 2017, and University Ave built in 2016. All three bike lanes are around the same length and were built relatively recently. These bike lanes were chosen as all three are moderately close to the center of town and are

Figure 2. Calculation of Increase in Proximity

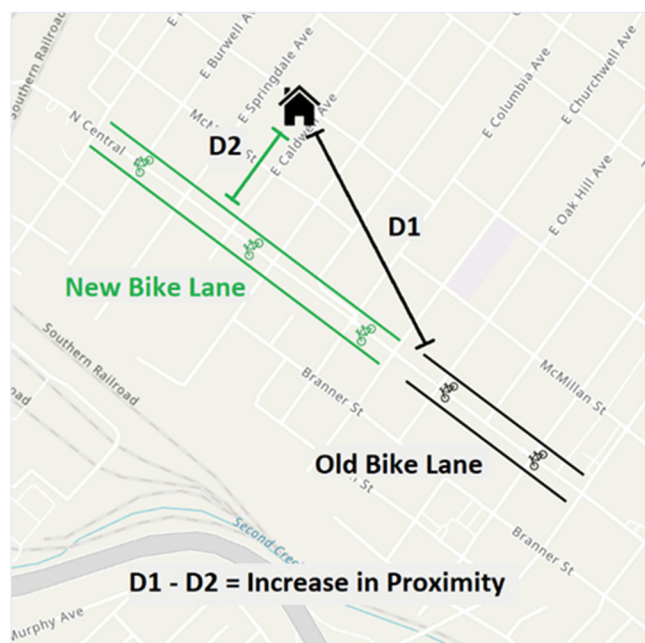


Table 1. Results of Analysis

Bike Lane	Total Increase in Home Proximity After Installation	Total Estimated Increase in Home Value	Bike Lane Length
N. Central Street	228,789 meters	\$1,061,582	~ 700 meters
Liberty Street	587,363 meters	\$2,725,364	~ 630 meters
University Avenue	177,456 meters	\$823,395	~ 580 meters

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used primarily for transportation, as opposed to recreation. The locations of these bike lanes are displayed in **Figure 3**.

Figure 3. Locations of Bike Lanes Evaluated



The Liberty Street bike lane was found to be the most valuable. (See **Table 1** for full results.) This was expected as it is the furthest from any previously built bike lanes. Thus, its installation resulted in a relatively large increase in bike lane proximity for the local area. While the bike lane along N. Central Street is a popular thoroughfare between downtown and North Knoxville, it is also close to other alternative bike lanes which lowers its value in our analysis. An implicit assumption of this

framework is that bike lanes built in underserved communities are more valuable.

This framework does not delineate between different bike lane designs such as buffered vs. non-buffered or account for different levels of bike lane usage. It also does not take into account the proximity of other amenities and whether or not the bike lane actually connects residents to popular destinations. Proximity, as we have defined it, is the shortest, straight line between a bike lane and a home. This definition does not take into account the presence of impediments such as interstates and waterways that may make it difficult to reach a technically close bike lane.

It is important to note that our home price methodology only captures part of the value of a bike lane. It does not account for other factors such as the recreation and health benefits of physical activity conducted on bike lanes, the economic impact of bike lane design and construction, or the economic activity created from spending at shops and restaurants along the bike lane and bike shops that see increased business due to the bike lane. Therefore, the estimates reported in this brief should be viewed as a lower-bound estimate of the total economic value of these bike lanes.

ABOUT THE AUTHORS

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