Transportation Safety and Mobility

Bicycle Infrastructure and Business District Change

Modeling the relationship between bicycle infrastructure and business performance.

MAY 2019

Project Title:
Bicycle Infrastructure and Business District Change

Task Number: 3136

Start Date: March 1, 2017

Completion Date: February 28, 2018

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WHAT IS THE NEED?

Increasing bicycle mode share has begun to show promise as a successful public health and environmental strategy in the United States. As communities across California expand bicycle infrastructure, business owners in these transitioning corridors have much at stake. Yet, very little is known about the actual, quantifiable effects of bicycle infrastructure on business establishments. This puts local governments in the difficult position of 'flying blind' by implementing bicycle infrastructure in commercial corridors with little to no contextualizing research.

At the same time, cycling projects continue to be controversial and often face delays due to opposition led by merchants and their political allies. This delay costs taxpayer dollars, occupies government employee time, and prevents potentially beneficial projects from rolling out on schedule. Neither the private sector nor academia has stepped up to resolve the lack of clarity on this topic, until now.

WHAT WAS OUR GOAL?

The goal of this project is to better understand whether businesses grow or decline following the installation of bike infrastructure. These results will be of interest to local planners and policymakers given that bicycle infrastructure is a principal tool for increasing bicycle mode share and achieving the environmental and health benefits associated with increased cycling rates. Research results are already available in the form of a final report, to be followed shortly by a policy brief and peer-reviewed journal article.

WHAT DID WE DO?

The research project started with a review of existing literature on the economic impacts of bicycle infrastructure. We then developed and linked datasets on bicycle infrastructure and business sales for the nine-county San Francisco Bay Area. Additional variables added to this database were neighborhood, built environment, and business characteristics.

The analysis consisted of descriptive statistics about business performance on commercial corridors that abut bicycle infrastructure, and then models of the relationship between bicycle infrastructure and business change. We used linear regression, controlling for the surrounding built environment and demographic profile, to examine the role of bicycle infrastructure in business sales change, and logit regression to determine the effect of bicycle infrastructure on the business decision to close.

Finally, an intercept survey of shoppers explored the relationship between bicycle infrastructure and shopping behavior. This survey examined modes used to arrive at shopping destinations, average amount spent, and frequency of shopping trips.

WHAT WAS THE OUTCOME?

One relatively understudied aspect of bicycle infrastructure is its impact on business establishments. Advancing the understanding of this relationship is increasingly relevant as cities across California continue to push for more bicycle infrastructure projects—and face opposition from business constituencies, among others.

Our models of the relationship between bike facilities and business outcomes suggest that bicycle infrastructure has a generally mixed effect on the change in sales over time on an individual business level, with the most positive effects occurring on neighborhood roads. The relationship between business turnover and bicycle infrastructure is either neutral in the case of San Francisco or pro-business in the case of Alameda County, with location on bicycle infrastructure of all types resulting in a reduced likelihood of turnover.

This generally disproves business owners' claims that bike infrastructure is bad for business, though it generally does not confirm cyclist advocates' claims that bike infrastructure is good for business. Instead, it appears that for businesses there are a multitude of other factors that do have a determining effect on the change in sales over time. Business characteristics were overall the most reliable predictors of sales. Neighborhood characteristics were likewise poor predictors. Corridor characteristics were somewhat predictive, with high-volume primary roads associated with sales declines.

WHAT IS THE BENEFIT?

This research responds directly to Caltrans Priority Goals 1and 3: Safety and Health, and Sustainability, Livability and Economy. In terms of safety and health, this research seeks to address a common source of political backlash against bicycle infrastructure projects – complaints from merchants. Peer-reviewed studies have already documented the health benefits of cycling and safety benefits of bicycle infrastructure. However, uncertainty surrounding the effect of bicycle infrastructure on business performance has regularly been cause for opposition of these projects. Our major finding is that bicycle infrastructure does not have a significant impact on business sales, while other factors like roadway characteristics, business type, and local income do. This should expedite the delivery of bicycle infrastructure projects, which in turn is likely to have a positive effect on population health and

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Research Results

cyclist safety.

Reducing the number of single occupancy vehicle trips is a critical step towards meeting state and national greenhouse gas reduction targets. Cycling can absorb some of this mode shift, especially short trips or certain segments of trip chains. Our finding that bicycle infrastructure will not make a difference on business performance will be beneficial to transportation planners as they endeavor to plan future bicycle infrastructure projects.

IMAGES

Figure 1: Example of Class II Facility: Broadway, Oakland

Figure 2: Example of Class III Facility: Milvia Street, Berkeley
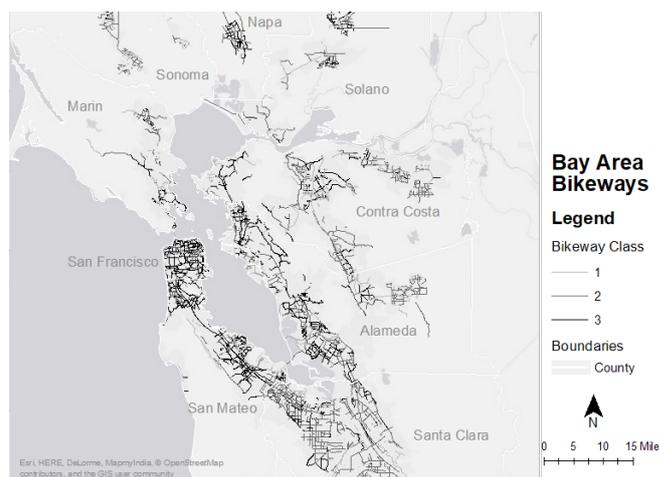

Figure 3: Valencia Street

Figure 4: Map of Bicycle Infrastructure, San Francisco Bay Area, 2014