



Caltrans Division of Research,
Innovation and System Information

Research

Notes

Transportation
Safety and
Mobility

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Project Title:

UTC - Bicyclist Behavior in San Francisco:
A Before-and-After Study of the Impact of
Infrastructure Investments (National Center)

Task Number: 2826

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Completion Date: September 30, 2015

Task Manager:

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Bicyclist Behavior in San Francisco from Infrastructure Investments

Before-and-after study of changes in bicycling behavior in response to infrastructure investments in San Francisco

WHAT IS THE NEED?

Many cities in California invest in bicycle infrastructure as a way to increase the sustainability of travel. A growing body of evidence shows that providing bicycle infrastructure has a positive effect on the choices made by bicyclists and influences the routes that they choose. However, most of these studies are cross-sectional in design; thus, they provide limited evidence of a causal relationship between infrastructure and bicycling behavior. To better understand the impact of bicycle infrastructure investments, this project will examine changes in bicycling behavior in San Francisco using data collected before and after major bicycle infrastructure investments.

WHAT ARE WE DOING?

The proposed project uses a before-and-after approach to examine the effectiveness of bicycle infrastructure investments by studying the changes in the routes that bicyclist choose to travel through a city. The setting for the study is San Francisco. The city invested \$3.3 million in bicycle infrastructure improvements from early 2011 to December 2013. These investments correlated with a 14% increase in counts of bicyclists utilizing the infrastructure. During the time period of 2006 through 2013 there was a 96% increase in bicyclist counts (SFMTA, 2013a). The degree to which the 2011 – 2013 infrastructure modifications contributed to changes in bicycling behavior is not clear.

In order to better understand the relationship between these infrastructure modifications (some modifications include bicycle sharing, construction of bicycle facilities, new bike lanes, bicycle boulevards, cycle tracks, extended curbs), and their influence on changing bicycling behavior, we replicated the successful GPS travel survey. The GPS travel survey was conducted in 2010 by the San Francisco County Transportation Authority (SFCTA) to build a dataset that can be used for before-and-after analysis. The tasks for the project are as follows:



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Task 1: Database development

Task 2: Analysis of the impact of infrastructure investments on route choice

Task 3: Analysis of factors influencing bicyclist route choice

Task 4: Validation of SFCTA Bicyclist Route Choice Model

Task 5: Research report

WHAT IS OUR GOAL?

The goal of this research is threefold:

- (1) Evaluate the impact of infrastructure investments on bicycle route choice.
- (2) Identify key factors influencing bicycle route choice and frequency.
- (3) Validate a route choice model for use in estimating future effects of infrastructure projects.

This results of this research will be summarized in a final research report

WHAT IS THE BENEFIT?

While advances in automobile technology and low-carbon fuels continue to help reduce conventional air pollution and greenhouse gas emissions, changes in travel behavior are also essential to meeting the state's target to reduce greenhouse gas emissions. One strategy for meeting the target is to shift vehicle miles traveled to bicycle miles traveled. Bicycling is a low-impact mode of travel that has the potential to reduce air pollution, congestion, GHGs, and noise pollution. It also has tremendous potential for increasing public health.

The rise in bicycle infrastructure planning in many cities generated a growing need for research to inform and direct these efforts. Research shows the success of efforts to increase bicycling depends on an approach that integrates infrastructure investments with a variety of promotional and educational programs. However, because infrastructure investments are usually the most costly element of an integrated approach, these investments merit a rigorous assessment. By improving our understanding of the relationship between bicycle infrastructure investments and bicycling behavior, this proposed project will provide guidance for future investments.

WHAT IS THE PROGRESS TO DATE?

Quarter 2 Fiscal Year 14/15 (October 1 – December 31)

Owing to a delay in the approval of the task order and in the acquisition of data from the San Francisco County Transportation Authority (SFCTA), work on Task 1, database development, did not commence in this time period. Work on the project has not started.

Quarter 3 Fiscal Year 14/15 (January 1 – March 31)

The GPS data from SFCTA was received at the end of January 2015. Data analysis has not commenced as students were assigned to other projects for the year due to the delay for approval of the task order, coupled with delay in acquiring data from SFCTA.

Work on the project has not started. A no-cost extension will be requested for the project to reflect the delayed start of analysis. Data analysis will begin shortly.



Figure 1: Protected Bicycle Lane with Soft-Hit Posts in San Francisco