



Caltrans Division of Research,
Innovation and System Information

Research



Results

Planning,
Policy, and
Programming

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Project Title:

Measuring and Facilitating
Bicycle/Pedestrian Activity in
California and Relationship to
Land Use

Task Number: 2200

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Non-Motorized Travel: Analysis of the 2009 NHTS California Travel Survey Add-On Data

Analyze and report the results of 18,000 travel surveys from the 2009 NHTS California Add-on to improve quantitative understanding of non-motorized travel in California and the factors that influence it, including the characteristics of local environments as well as those of individuals and households.

WHAT IS THE NEED?

Walking and bicycling as modes of transportation – traditionally called non-motorized transportation or more recently labeled active travel – offer many benefits from a health standpoint, in addition to economic, environmental, and equity benefits. Yet they represent a small share of all travel in the U.S., which is less than 10% of all trips as of 2008. Although many factors explain this situation, significantly higher levels of walking and bicycling in other developed countries, including Denmark (26%), Germany (32%) and the Netherlands (47%), as well as higher levels of bicycling within some communities in the U.S., suggest that policy changes could bring about a significant increase in the use of non-motorized modes.

Understanding patterns of non-motorized travel and the factors that influence them, both the quality of the environment and the characteristics of individuals, is critical for designing effective policies to promote non-motorized travel.

WHAT WAS OUR GOAL?

The goal of this project was to improve our understanding of non-motorized travel in California and the factors that influence that travel. To achieve this objective, the research team analyzed data from the 2009 National Household Travel Survey (NHTS), focusing on the California Add-on data.

Descriptive results showed who is walking and bicycling, how much, and for what purposes. Modeling results identified key factors associated with walking and bicycling, including environmental characteristics and individual characteristics.



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economy and livability.

WHAT DID WE DO?

Analyze results of the 2009 National Household Travel Survey (NHTS) California Add-On that Caltrans funded in 2009 regarding non-motorized travel, which collected data on the travel of 18,000 residents in all 58 counties, and included “oversampling” in San Diego

County to establish more robust data for understanding non-motorized travel in that area. This data provides a significant opportunity to better understand non-motorized travel behavior throughout the state, filling an important gap in existing research.

WHAT WAS THE OUTCOME?

A spatial database was developed for the state that captures key characteristics of the built environment. This task involved the assembly of existing data, much of it available through the Information Center for the Environment at UC Davis, in conjunction with another Caltrans-funded project. Additional variables were extracted as necessary from existing data sources. Variables included, for example, population density, employment density, and street connectivity. The limited data available on bicycle and pedestrian infrastructure was incorporated to the degree possible. This task included basic descriptive analysis of neighborhood characteristics associated with higher levels of pedestrian and bicycle activity.

Econometric techniques were used to examine the effect of individual characteristics and environment characteristics on non-motorized behavior. Separate models were estimated for walking and bicycling for different purposes, for different measures of travel (e.g. whether someone does or doesn't walk or bicycle, frequency of walking or bicycling trips, share of trips by walking or bicycling, walking or bicycling distance, etc.). A final model was developed for non-motorized behavior.

WHAT IS THE BENEFIT?

This research has documented a new method of estimating pedestrian and cyclist activity levels at a fine geographic scale.

The results of the project will be useful in estimating the effects of proposed bicycle and pedestrian projects on vehicle-miles-traveled (VMT) and greenhouse gas emissions. The results will contribute to the development of General Plans, local Bicycle and Pedestrian Plans, and Regional Transportation Plans.

The project will also help to advance the goals of the California Blueprint for Bicycling and Walking and to further the implementation of the state's Strategic Highway Safety Plan, and they will help Caltrans and the state's MPOs in meeting the requirements of the new national policy on bicycle and pedestrian accommodation as well as recent California law requiring Complete Streets implementation.

LEARN MORE

Final Report Link

<https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/f0016815-final-report-task-2200.pdf>

IMAGE

Neighborhood Type	Mean Miles Walked Per Road Mile		Mean Miles Biked Per Road Mile	
	NHTS	CHTS	NHTS	CHTS
Central City	922	1,412	115	379
Urban	224	246	85	115
Suburb	92	65	33	47
Rural	34	22	14	13
	Mean Annual Accidents Per Million Miles Walked on a Weekday		Mean Annual Accidents Per Million Miles Biked on a Weekday	
	NHTS	CHTS	NHTS	CHTS
Central City	98	64	2,627	794
Urban	122	112	1,033	767
Suburb	133	189	837	582
Rural	199	327	899	899

Image 1: Overall mean results by neighborhood type for two travel surveys.