DRISI

Caltrans Division of Research, Innovation and System Information

Research Notes

Planning, Policy & Programming

DRISI provides solutions and knowledge that improves California's transportation system

Optimizing Bikeshare Service to Connect Affordable Housing Units with Transit Services

Developing a framework to optimize bikeshare services between affordable housing and transit.

WHAT IS THE NEED?

Currently, affordable housing has become an important part of urban housing planning, and; thus, both Federal and local governments seek to provide more affordable housing for low-income populations. At the same time, Transit-Oriented Development (TOD) has attracted increased interest from local transit agencies. Unfortunately, these two national and local trends have been addressed separately resulting in a disconnect between affordable housing and transit services.

Much of the research related to affordable housing and transit service has focused on combining these two actions. However, this is a complex effort, which may not show short-term results. Bikeshare, as a growing micro-mobility service, shows great potential to increase accessibility, especially for disadvantaged populations. Moreover, researchers have not thoroughly examined the potential of bikeshare to solve the accessibility gap between affordable housing and transit.

WHAT ARE WE DOING?

This work will develop a mathematical model and develop a framework to make the location more effective of bikeshare stations to lessen the limits between affordable housing and transit services. The work will include case city selection, data collection, bikeshare demand analysis, transit accessibility analysis, and optimization modeling.

WHAT IS OUR GOAL?

This project will develop a framework to make the location more effective of bikeshare stations to lessen the limits between affordable housing and transit services. This process will consider both the bikeshare trip demand, transit service schedule,

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available affordable housing units, and other geographical information.

WHAT IS THE BENEFIT?

The results may provide bikeshare planning suggestions to connect affordable housing units and transit services, which can prioritize transit funding. It may also provide advice on how bikeshare may increase accessibility, particularly for disadvantaged populations. If affordable housing and transit service can be better connected, it may provide broader societal benefits.

WHAT IS THE PROGRESS TO DATE?

We have gathered additional information about affordable housing in the Sacramento Area Council of Governments (SACOG) area. We have also processed bike sharing data and integrated the data collected with other socio-economic data for the region.

We have conducted econometrics modeling and identified potential information to use when updating optimization parameters. We've estimated the generation and distribution models incorporating the housing data, updating the optimizing algorithm with final models and implementing the optimization and conducting the sensitivity analyses.

We finalized data collection algorithm and agent based on model development, as well as finalizing quantitative analysis for the SACOG area.
The final draft report has been written and the next steps are to circulate the draft report for review and comment, and begin writing the policy brief.
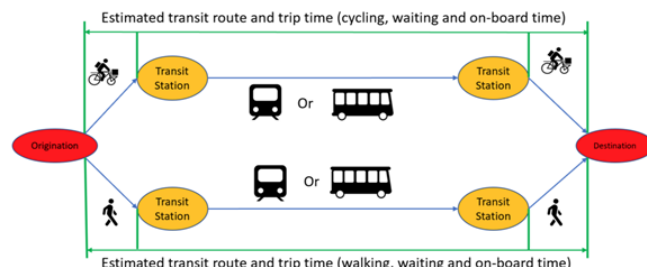
IMAGE

Image 1: Various data flows in the vehicle infrastructure communication environment