The trade-offs between livability and mobility

How green and active transportation modes can compete and/or work together

San José, Calif., May 25, 2017 — As we seek to reduce the negative impacts of driving, it is vitally important to understand the relative attractiveness of potential driving alternatives. Bicycling, walking, and transit are green and active transportation modes that should be encouraged, but the relative effectiveness of these modes depends on how well streets are designed in terms of safety, comfort, and cost (travel & wait times, fares). MTI’s recently published report, Improving Livability Using Green and Active Modes, analyses the relative trade-offs between bicycling and transit using the dimension of travel time – an essential component of mobility.

Using the level of traffic stress (LTS) classification criteria previously developed by MTI researchers, the authors examined how streets in two study areas – Oakland (CA) and Denver (CO) – functioned for auto-alternatives. According to Dr. Bruce Appleyard, one of the study’s authors, “there can be a classic trade-off between livability and mobility – and these sustainable and active modes can actually compete with one another if streets and services are not designed comprehensively and with the needs of each of these respective modes in mind.”

Key findings from the research indicate that:

• Higher LTS (3 and 4) networks around transit routes are uncomfortable and unattractive for bicycling and walking, severely limiting access and the effective catchment area of the transit service;
• When the two modes share the same network, LTS 1 and 2 can shift the relative attractiveness of once complementary mode pairings (e.g. a bicycle/bus mode choice) toward becoming directly competitive and possibly substitutable with each other;
• Outside a 1 mile buffer area of a transit stop, the bicycle-only mode becomes more attractive, depending on certain factors such as transfer penalty, cost, as well as the bicyclist’s independence.

According to Dr. Maaza Mekuria, principal investigator, these findings “suggest that a more nuanced, and comprehensive approach to analyzing mobility and livability trade-offs is important, particularly as they relate to sustainable and active transportation modes such as bicycling, walking, and transit.” Several policy recommendations for transit planners are provided, including an emphasis on improving transit mobility by reducing travel time, and planning for LTS 2 levels in and around transit routes to provide safe access for pedestrians and bicyclists without impeding transit mobility.

The report is available for free download from http://transweb.sjsu.edu/project/1205.html.

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At the Mineta Transportation Institute (MTI) at San Jose State University (SJSU) our mission is to increase mobility for all by improving the safety, efficiency, accessibility, and convenience of our nation's transportation system through research, education, workforce development and technology transfer. We help create a connected world.

MTI was founded in 1991 and is funded through the US Departments of Transportation and Homeland Security, the California Department of Transportation, and public and private grants. MTI is affiliated with SJSU’s Lucas College and Graduate School of Business.

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