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Contact: Donna Maurillo
831-234-4009
maurillo@mti.sjsu.edu

Mineta Transportation Institute Releases Study on Linking Highway Improvements to Changes in Land Use

Funderburg, Nixon, and Boarnet study three California counties to develop a better forecasting tool for transportation decision making

SJSU Research Center
210 N. Fourth St., 4th Fl.
San José, CA 95112

Tel // 408.924.7560
Fax // 408.924.7565

www.transweb.sjsu.edu

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San Jose, Calif., March 15, 2010 – The [Mineta Transportation Institute](#) (MTI) has published [Linking Highway Improvements to Changes in Land Use with Quasi-Experimental Research Design: A Better Forecasting Tool for Transportation Decision-making](#), which studies the ability of quasi-experimental matching techniques to address differing contexts associated with potential highway improvements and extension projects in forecasts of regional growth. This report incorporates popular regional growth forecasting models into a quasi-experimental research design that directly relates new highway investments in three California counties to changes in population and employment location, while controlling for no-build historical counterfactuals.

The strategy permits a comparison of the before-and-after tests for effects of investments on economic growth and land use in three regions that contrast how increased highway access affects development patterns. The study includes an urban center in Santa Clara County, an exurban region in Orange County, and a small town in Merced County. The need for forecasts to account for what would happen to land use in the absence of a project came to the forefront in 1997 when a U.S. District Court judge ruled that the Environmental Impact Statement for a proposed Illinois toll road was deficient because growth projections were the same in the build and no-build scenarios.

“We find that traditional forecast approaches, which lack explicit control selection, can lead to erroneous conclusions about an impact,” said Hilary Nixon, PhD, an assistant professor of urban and regional planning at San José State University. “Our forecasting tool should improve the quality and reliability of Environmental Impact Statements.”

The report’s central finding is that, while improvements in surface transportation tend to have large impacts on growth patterns, the nature of the effects is materially dependent on the context of the highway investment. The report’s models estimate that, on average, a statistically and economically significant 338 to 11,103 new Orange County jobs occurred within a typical census tract in the county’s formerly exurban region after gaining highway access when compared to no-build counterfactuals. On the other hand, the models predict a starkly different outcome as a result of a highway bypass built outside the small town of Livingston in Merced County, where the researchers found an economically and statistically significant 12 to 83 job losses per square kilometer that might be anticipated had the bypass not been built. They found no significant effects on population or employment growth

that can be attributed to the new highway investments near the urban center of Santa Clara County.

Policy implications from this analysis are potentially significant, particularly as it relates to the environmental review process. The research results suggest that context is important and that the impacts on population and employment growth from infrastructure improvements are not necessarily consistent from one geographic region to another, nor from one type of project to another. As seen in the Illinois case (*Sierra Club v. United States DOT*, 1997), documenting the potential impact is an essential component of the review process, and better models are needed to forecast changes.

The free report can be downloaded from www.transweb.sjsu.edu. Click “Research” and then “Publications.” Scroll down to the reports.

ABOUT THE AUTHORS:

RICHARD G. FUNDERBURG, PhD

Dr. Funderburg is assistant professor of urban and regional planning at the University of Iowa. His research investigates an array of factors that attract economic activities to both developing and advantaged regions. He earned a PhD in planning, policy, and design from University of California, Irvine and he holds MPPA and BA degrees from California State University.

HILARY NIXON, PhD

Dr. Nixon is an assistant professor of urban and regional planning at San José State University. Her research and teaching interests in environmental planning and policy focus on the relationship between environmental attitudes and behavior, particularly related to waste management, and linkages between transportation and the environment. She has a BA from the University of Rochester in environmental management and a PhD in planning, policy, and design from the University of California, Irvine.

MARLON G. BOARNET, PhD

Dr. Boarnet is professor of planning, policy, and design and economics at the University of California, Irvine, where he has been on faculty since 1991. Previously, he was chair of the Department of Planning, Policy, and Design at UC Irvine. He earned a PhD from Princeton University. His research focuses on the inter- and intra-metropolitan distribution of economic activity, the links between transportation policy and economic development, local economic development policy, and land use. He is widely published and serves on the editorial boards of the *Journal of Planning Literature* and *Papers in Regional Science*.

ABOUT THE MINETA TRANSPORTATION INSTITUTE:

The [Mineta Transportation Institute](http://www.mineta.org) (MTI) was established by Congress in 1991 as part of the Intermodal Surface Transportation Efficiency Act (ISTEA) and was reauthorized under TEA-21 and again under SAFETEA-LU. The institute is funded by Congress through the US DOT’s Research and Innovative Technology Administration, by the California Legislature through the Department of Transportation (Caltrans), and by other public and private grants and donations, including the U.S. Department of Homeland Security. The US DOT selected MTI as a national “Center of Excellence” following a 2002 competition.

The Institute has a Board of Trustees whose internationally-respected members represent all major surface transportation modes. MTI’s focus on policy and management resulted from a board assessment of the industry’s unmet needs and led directly to choosing the San José State University College of Business as the Institute’s home. MTI conducts research, education, and information and technology transfer focusing on multi-modal surface transportation policy and management issues. Visit www.transweb.sjsu.edu