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MODELING THE ENVIRONMENTAL IMPACTS OF THE TRANSPORTATION SECTOR IN HAWAII

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Abstract

Using a computable general equilibrium (CGE) model of the entire state's economy, we first identify and measure the economic activity related to transportation activities in Hawaii. Next, using GIS (Geographic Information Systems) and spatial allocation techniques, we identify the location of these activities and estimate some of the resulting environmental impacts. Transportation is seen as both an important industry as well as a key input into the production of other goods and services. Our principal database is an input-output (I-O) table which contains detailed information on 131 different economic sectors in the state. Combined with census data and various spatial databases, our effort enables us to not only estimate energy use and consumption, but also to identify where the most significant impacts and threats to our environment occur. Hawaii, because of its island geography and isolation from other places and the availability of a rich database provides a unique opportunity to examine the close interaction between transportation, economic activity, and the physical environment. Our contributions to this topic might be seen in terms of three different areas. First, we have integrated economic and environmental theories, methods, and models. Second, while we have focused on data from Hawaii, much of our findings are transferable to other localities. Third, our research has pointed towards not only a deeper understanding of the relationship between transportation, economics, and environmental quality, but also to various policies and programs which might make use of our findings and methodological tools.