Travel behavior changes resulting from temporary freeway closures: An empirical investigation from Northern California

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Abstract

Modifications in transportation infrastructure and services deeply affect travel behavior. In particular, temporary closure/reconstruction of transportation facilities (and permanent modifications even more) may constitute a particular impetus to change one's travel behavior. Many studies have dealt with the analysis of behavioral changes in commuters and regular travelers, as the result of modifications in transportation infrastructures, organization, and fares. Modifications in habits and travel attitudes have also been observed as a consequence of only temporary changes in transportation fares or service, as well as a consequence of personalized travel counseling.

This study investigates the effects of the temporary closure of an important link in the interstate highway network, on the travel behavior of regular commuters. In June and July 2008, an approximately one-mile stretch of Interstate 5 through downtown Sacramento, California (the state capitol) was intermittently closed for a $27 million reconstruction ("the Fix I-5" project, or "the Fix"). This link normally carries nearly 200,000 vehicles daily. In preparation for the Fix, numerous strategies were implemented and promoted, including a Governor's Executive Order urging state agencies to use telecommuting, alternative work schedules, and transit to the extent possible (it is estimated that 75,000 State employees work in and around downtown Sacramento).

UC Davis researchers conducted a multi-faceted investigation of the behavioral response to this series of closures during multiple phases of the reconstruction, i.e. before, during and after the temporary closures of the interstate link. Among other elements of the study, several internet-based surveys were administered to a sample of Sacramento-area commuters potentially affected by the closures, to ascertain how (if at all) they changed their commute patterns in response. The present paper focuses on the third and final survey wave, conducted in November 2008, to explore how many people who changed their behavior during the Fix were still continuing the same new behavior pattern more than three months later.

The paper develops discrete choice models of the decision to keep the new behavior pattern. Several groups of explanatory variables are included in the study: among these, sociodemographic data and work-related information are allowed to enter the model, as well as a number of transportation-related attitudes, measuring time- and price-sensitivity, environmental beliefs, and preference for various modes of travel. The role of changes in gasoline prices is also incorporated, in order to account for additional influences on the revealed changes in travel behavior. The study provides generalizable insight into the overall effects of such temporary closures on commuters' travel behavior, in terms of changes of work and travel schedules, adoption of telecommuting and changes in travel modes, and the eventual persistence of these changes in regular travelers' habits even some time after the reconstruction event.