

Doing More with Limited Data Collection Budgets

AN AGILE TOUR-BASED MODEL BUILT FROM PASSIVE DATA: A CASE STUDY IN ASHEVILLE,
NORTH CAROLINA

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For many small and medium-sized communities, household travel surveys are too expensive to collect regularly or adequately. Even for those communities that can afford a household travel survey, cost constraints often limit the survey to a small sample size, resulting in data that are behaviorally rich but too thin to produce detailed segmentations. As a result, these communities are often left with highly aggregate travel models that have limited response to land use and transportation alternatives.

As an alternative to household travel surveys, many have been interested in using passive data (e.g., cellular phone or consumer data) to develop elements of travel models, but modern trip- and tour-based models require a link between demographics and trip-making behavior that is uncommon in passive data. Using multiple sources of passive data and an innovative person-based discrete event simulation framework, we are building an agile modeling approach that will offer the benefit of person- and tour-based analysis without the costs and development requirements of an activity-based model. We believe the agile modeling approach developed through this research will be a good fit for small and medium-sized communities due to the portability of the methodology and the reduced data requirements.

Using data kindly shared by the North Carolina Department of Transportation (NCDOT) and the French Broad River Metropolitan Planning Organization (FBRMPO), we will compare the proposed agile tour-based model with a modern trip-based model recently developed for the Asheville region in North Carolina. The main result from this project will be a detailed comparison of costs, development time, complexity, usability, and accuracy between NCDOT's recent aggregate trip-based model and this new tour-based model constructed from passive data.