



Florida Department of Transportation Research

TBEST Model Enhancements - Parcel Level Demographic Data Capabilities and Exploration of Enhanced Trip Attraction Capabilities
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The challenge of designing public transportation systems is connecting areas where people who are likely to use public transportation live to the places they are likely to go. This complex task can be guided by software that traditionally relies on population and employment datasets. The Florida Department of Transportation (FDOT) has extensively investigated the use of the Transit Boardings Estimation and Simulation Tool (TBEST), a travel demand forecasting tool tailored to public transportation planning needs.

To extend the capabilities of TBEST, FDOT contracted with researchers from the National Center for Transit Research at the University of South Florida. The project had two goals. First, the researchers explored incorporating parcel-level data into TBEST. Taking this approach was intended to provide TBEST with better information about the demography of areas near bus stops and improve ridership predictions. Second, the researchers explored ways of addressing special trip generators within TBEST. Special generators are activities or land uses, such as sports facilities or entertainment venues, that can attract riders but are not well represented by the population and employment data that public transportation planning has tended to rely on.

Researchers developed the necessary programming to incorporate parcel-level data into TBEST, and conditioned the datasets in order to properly calibrate the new model. Broadening TBEST's approach also required researchers to alter the way TBEST looks at the choice to use public transit travel. In this case, they decided to shift from the traditional socio-demographic basis to one of trip productions and attractions. This approach allowed the model to not only capture the geographic precision of parcel-level data, but also allowed the model to take advantage of extensive trip-making data related to land use type. This change overcomes the bias of traditional modeling toward employment levels.



The graphical portion of a TBEST display in analysis mode shows one way that data can be integrated to assist public transit analysts and planners.

In the second phase of the project, researchers examined special generator treatment in TBEST. With the change in trip estimation approach, TBEST now permits an analyst to incorporate more varied and detailed information at the parcel level. With this strategy, generators that were “special” under the traditional approach can now be readily incorporated into the model as another class of attractors.

The researchers found that transitioning to the parcel-based model was a promising approach for TBEST. Parcel-based modeling offers many potential benefits, such as providing more precision in estimating walking distance to stops, which has been shown to be a critical factor in the decision to use public transit. The parcel-based model offers the analyst more flexibility in planning and testing potential routes as well as allowing evaluation of land use scenarios around transit stops.