

AN IMPROVED KALMAN FILTERING APPROACH TO ESTIMATE ORIGIN-DESTINATION MATRICES FOR FREEWAY CORRIDORS

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ABSTRACT

This paper examines the estimation of Origin-Destination (OD) matrices for freeway corridors using inner-link induction loop data. A trip generation model is used and various parameter optimization and statistics based methods are examined to estimate the split parameters in this model.

A Kalman-based method is described using the model-predicted link-flow variances and covariances while processing the measurements. A simple but effective solution is presented to the problem of initializing the Kalman filter and imposing the natural constraints to the estimates.

The resulting method is tested on both simulated and observed data and has been compared with other methods such as least squares and constrained optimization, showing that the Kalman based method leads to best results.

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