Large scale applications of behaviorally realistic transport models pose several challenges to transport modelers on both the demand and the supply sides. On the supply side, path-based solutions to the user assignment equilibrium problem help modelers in enhancing the route choice behavior modeling, but require them to generate choice sets by selecting a path generation technique and its parameters according to personal judgments. This paper proposes a methodology and an experimental setting to provide general indications about objective judgments for an effective route choice set generation. Initially, path generation techniques are implemented within a synthetic network to generate possible subjective choice sets considered by travelers. Next, 'true model estimates' and 'postulated predicted routes' are assumed from the simulation of a route choice model. Then, objective choice sets are applied for model estimation and results are compared to the 'true model estimates'. Last, predictions from the simulation of models estimated with objective choice sets are compared to the 'postulated predicted routes'. A meta-analytical approach allows synthesizing the effect of judgments for the implementation of path generation techniques, since a large number of models generate a large amount of results that are otherwise difficult to summarize and to process. Meta-analysis estimates suggest that transport modelers should implement stochastic path generation techniques with average variance of its distribution parameters and correction for unequal sampling probabilities of the alternative routes in order to obtain satisfactory results in terms of coverage of ‘postulated chosen routes’, reproduction of ‘true model estimates’ and prediction of ‘postulated predicted routes’.

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