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**Improving the convergence of simulation-based dynamic traffic assignment methodologies.**  
(English) [Zbl 1338.90110](#)  
*Netw. Spat. Econ.* 15, No. 3, 655-676 (2015).

Summary: The ability of simulation-based dynamic traffic assignment (SBDTA) models to produce reliable solutions is crucial for practical applications, particularly for those involving the comparison of modeling results across multiple scenarios. This work reviews, implements and compares novel and existing techniques for finding equilibrium solutions for SBDTA problems, focusing on their convergence pattern and stability of the results. The considered methodologies, ranging from MSA and gradient-based heuristics to column generation frameworks and partial demand loading schemes, have not been previously compared side-to-side in the literature. This research uses a single SBDTA platform to conduct such comparison on three real networks, including one with more than 200,000 trips. Most analyzed approaches were found to require a similar number of simulation runs to reach near-equilibrium solutions. However, results suggest that the quality of the results for a given convergence level may vary across methodologies.

**MSC:**

**90B20** Traffic problems in operations research  
**90C59** Approximation methods and heuristics in mathematical programming

**Keywords:**

[dynamic traffic assignment](#); [convergence](#); [MSA](#); [gradient projection](#); [gradient](#); [based](#); [column generation](#); [simplicial decomposition](#); [simulation](#); [heuristics](#); [stability](#)

**Full Text:** [DOI](#)

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