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**Arrival time reliability in strategic user equilibrium.** (English) Zbl 07258059  
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Summary: Although traffic assignment models remain heavily utilized globally for the planning and evaluation of new transport infrastructure, commonly applied assignment approaches continue to make very restrictive assumptions regarding determinism and perfect system knowledge to achieve regional scalability. Strategic user equilibrium (StrUE) has been previously proposed as a computationally scalable network assignment model which incorporates demand variability and expectation-minimizing traveler behavior. The proposed model extends the StrUE model to account for travel time penalties thereby enhancing the travel behavioral assumptions which are critical for reliability analyses. Under mild assumptions, we show that the path arrival time penalty is additive by link, allowing us to formulate traffic assignment as a convex program. Furthermore, we show that strategic user equilibrium results in expected link travel times that differ significantly from those predicted by user equilibrium. Finally, the expected arrival time penalties are shown to deviate non-uniformly by link, thereby having diverse impacts on traveler route choice.

**MSC:**

90 Operations research, mathematical programming

91 Game theory, economics, finance, and other social and behavioral sciences

**Keywords:**

[strategic user equilibrium](#); [reliability](#); [traffic assignment](#)

**Software:**

[pyuvdata](#)

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

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