

Platform to evaluate congestion pricing policies on population segments by time of day in New York City

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Evaluation of the demand for emerging transportation technologies and policies can vary by time of day due to spillbacks on roadways,

rescheduling of travelers' activity patterns, and shifting to other modes that affect the level of congestion. These effects are not well-captured with static travel demand models.

Chow and his team calibrated and validated the first open-source multi-agent simulation model for New York City, called MATSim-NYC, to support agencies in evaluating policies such as [congestion pricing](#). The simulation-based virtual test bed is loaded with a "synthetic" 2016 population of over eight million people, calibrated in a prior study. Model validation using transit stations and road links is comparable to NYPBM.

In a study published in *Transport Policy*, the researchers used the model to evaluate a congestion [pricing](#) plan proposed by the Regional Plan Association, and found a much higher (127K) car trip reduction compared to the RPA report (59K). The team discovered that the Association's pricing [policy](#) would impact the [population segment](#) making trips within Manhattan differently from the population segment of trips outside Manhattan: benefits from congestion reduction benefit the former by about 110%+ more than the latter.

The simulation can show that 37.3% of the Manhattan segment would be negatively impacted by the pricing compared to 39.9% of the non-Manhattan segment, which has implications for redistribution of congestion pricing revenues. The citywide travel consumer surplus decreases when the congestion pricing goes up from \$9.18 to \$14 both ways even as it increases for the Charging-related population segment. This implies that increasing pricing from \$9.18 to \$14 benefits Manhattanites at the expense of the rest of the city.

RPA congestion pricing policy would have net increase in consumer surplus. The results suggest toll revenue redistribution should focus on outer boroughs.

Provided by NYU Tandon School of Engineering

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