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# Ride-sourcing fleet rebalancing with proactive and targeted pricing

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## Abstract

This work studies the role of proactive and targeted pricing strategies on the service level and total revenue of a ride-sourcing platform, which is built as a discrete event simulator that incorporates simulated taxi data within a congestible road network. While pooled trips offer riders a discount to compensate for any additional travel or waiting time, surge pricing is applied to solo trips that are undesirable from an operational standpoint. The success in matching pooled trips relies on riders' attitudes towards the trade-off between travel time and cost. Therefore, formulated as a multinomial logit model, alternative-specific coefficients characterize the probability of a random draw among three options: solo ride, pooled ride, or a public-transit-like service. A multi-objective analysis shows that for regions where empty vehicle availability is low, by offering incentives with an additional discount for a pooled trip, the platform can proactively rebalance vehicle supply in high-demand regions during peak-hours, and reduce abandonment by decreasing detour and waiting times. Surge pricing alone cannot improve service level, but can be combined with pooling incentives to recover the platform's revenue loss.

## Keywords

pricing incentives, ride-sourcing, shared mobility, simulation, willingness-to-share