

## **Competitiveness of a Share Autonomous Electrical Vehicle Fleet Compared to Traditional Means of Transport: A Case Study for Transportation Network Companies**

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**Abstract :** Implementing shared autonomous electric vehicles (SAEVs) has many advantages. The main advantages are achieved when SAEVs are offered as on-demand services by a fleet operator. However, autonomous mobility on demand (AMoD) will be distributed nationwide only if a fleet operation is economically profitable for the operator. This paper proposes a microscopic approach to modeling two implementation scenarios of an AMoD fleet. The city of Zurich is used as a case study, with the results and findings being generalizable to other similar European and North American cities. The data are based on the traffic model of the canton of Zurich (Gesamtverkehrsmodell des Kantons Zürich (GVM-ZH)). To determine financial profitability, demand is based on the simulation results and combined with analyzing the costs of a SAEV per kilometer. The results demonstrate that depending on the scenario; journeys can be offered profitably to customers for CHF 0.3 up to CHF 0.4 per kilometer. While larger fleets allowed for lower price levels and increased profits in the long term, smaller fleets exhibit elevated efficiency levels and profit opportunities per day. The paper concludes with recommendations for how fleet operators can prepare themselves to maximize profit in the autonomous future.

**Keywords :** autonomous vehicle, mobility on demand, traffic simulation, fleet provider

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