

# Congestion Management for Electric Vehicle Charging Stations <sup>‡</sup>

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## Abstract

Congestion at electric vehicle (EV) charging stations has been a concern for drivers since the early days of the EV industry, and the concerns and issues grow as new EV sales continue to expand rapidly in many countries around the world. Using data from the charging industries in Germany and Switzerland from 2022 and 2023, we document two policy-relevant patterns in the data: (i) Congestion occurs throughout the EV charging networks in Germany and Switzerland. (ii) The distribution of charging session duration has a long right tail (right-skewed). (iii) Demand spills over from a congested charging station to neighboring ones. To evaluate the effectiveness of three congestion-management policies, we specify a model where drivers choose trip departure times, where to charge, and how long to charge: expanding the number of connectors, upgrading the electrical power, improving service quality (i.e. reducing outages), and congestion pricing.

**Keywords:** Electric Vehicles, Congestion, Queueing

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