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Tradable credit scheme: an alternative to license plate rationing and congestion pricing to foster modal shift

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Tradable credit scheme: an alternative to license plate rationing and congestion pricing to foster modal shift

Congestion, mode choice, and credits

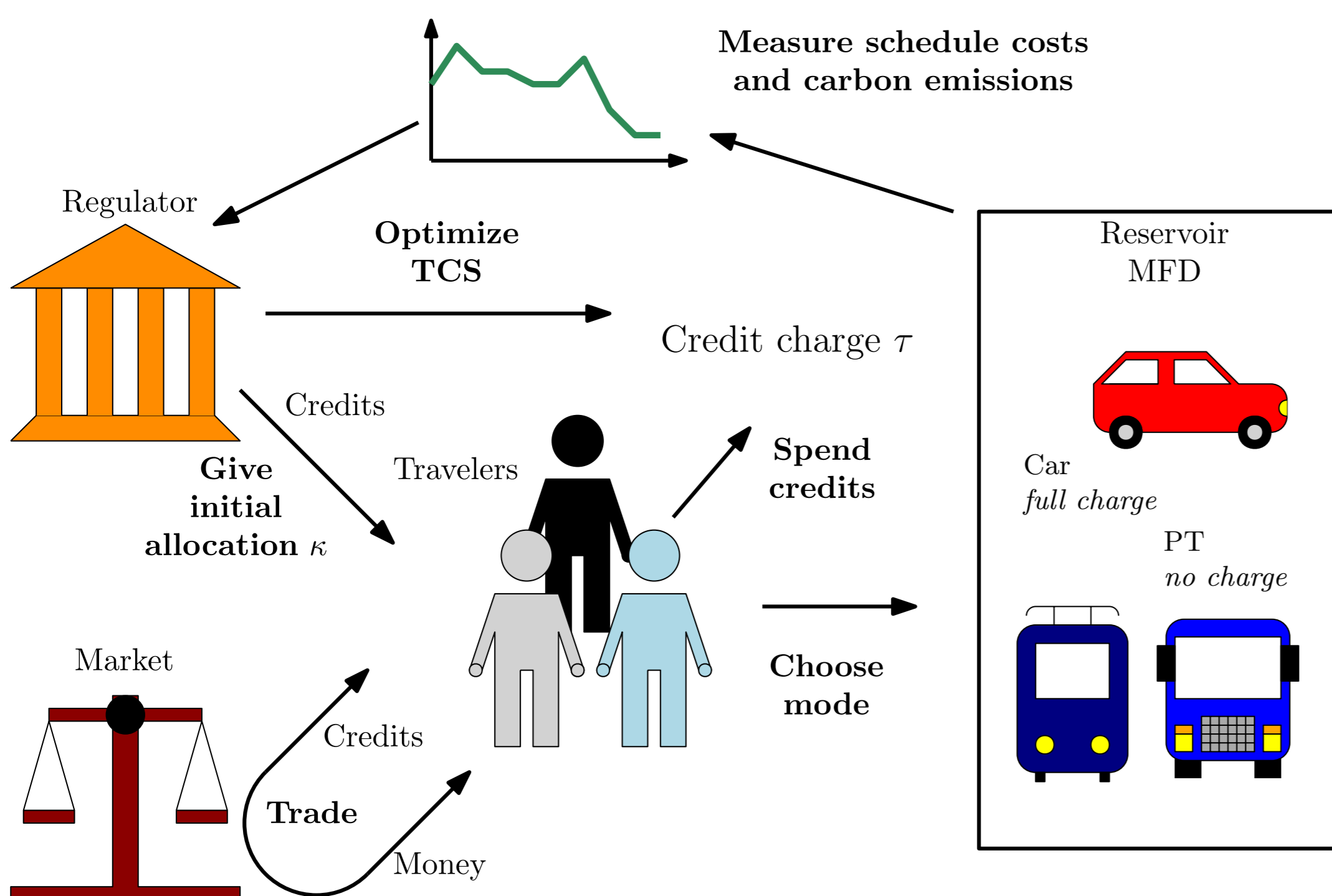
Reduce **congestion** and **pollution** by fostering Public Transportation (PT) ridership with Demand Management Schemes (DMS).

Tradable Credit Scheme (TCS): travelers get an initial allocation of credits for free from the regulator. They can use them to drive their car or trade the credits between themselves. The credit price is an output of the market. The regulator fixes the number of credits needed to drive a car for a day.

License Plate Rationing (LPR): a traveler can drive a car only every second day, and a part of the population is exempted.

Congestion pricing: a traveler needs to pay a fee to drive a car.

The congestion representation is based on the **Macroscopic Fundamental Diagram (MFD)**: the instantaneous mean speed is a function of the cars in the network. Account for congestion dynamics, trip heterogeneity, and low computation requirements.



Case Study: Lyon, FR

Morning commute (7:00 to 10:00).

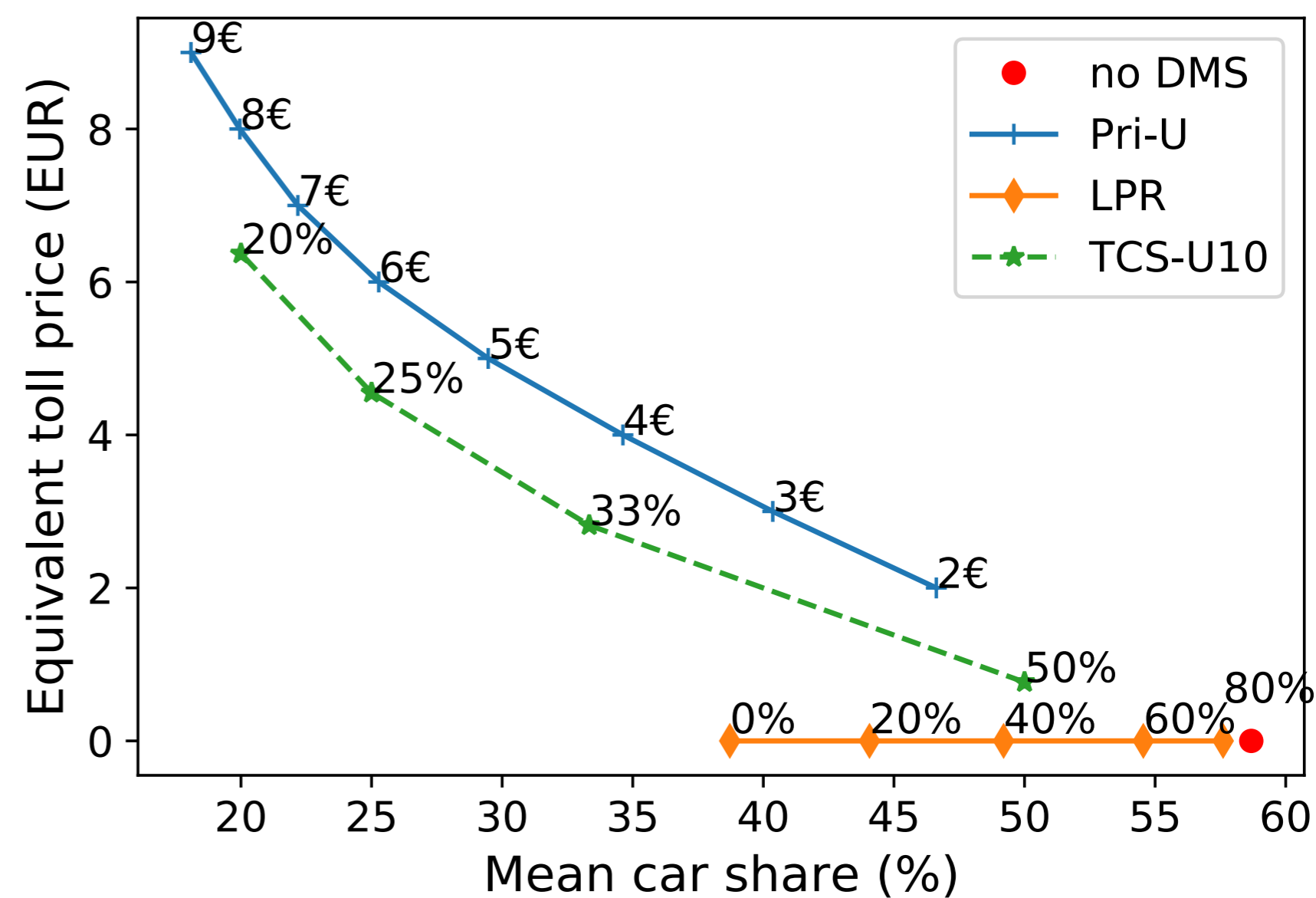
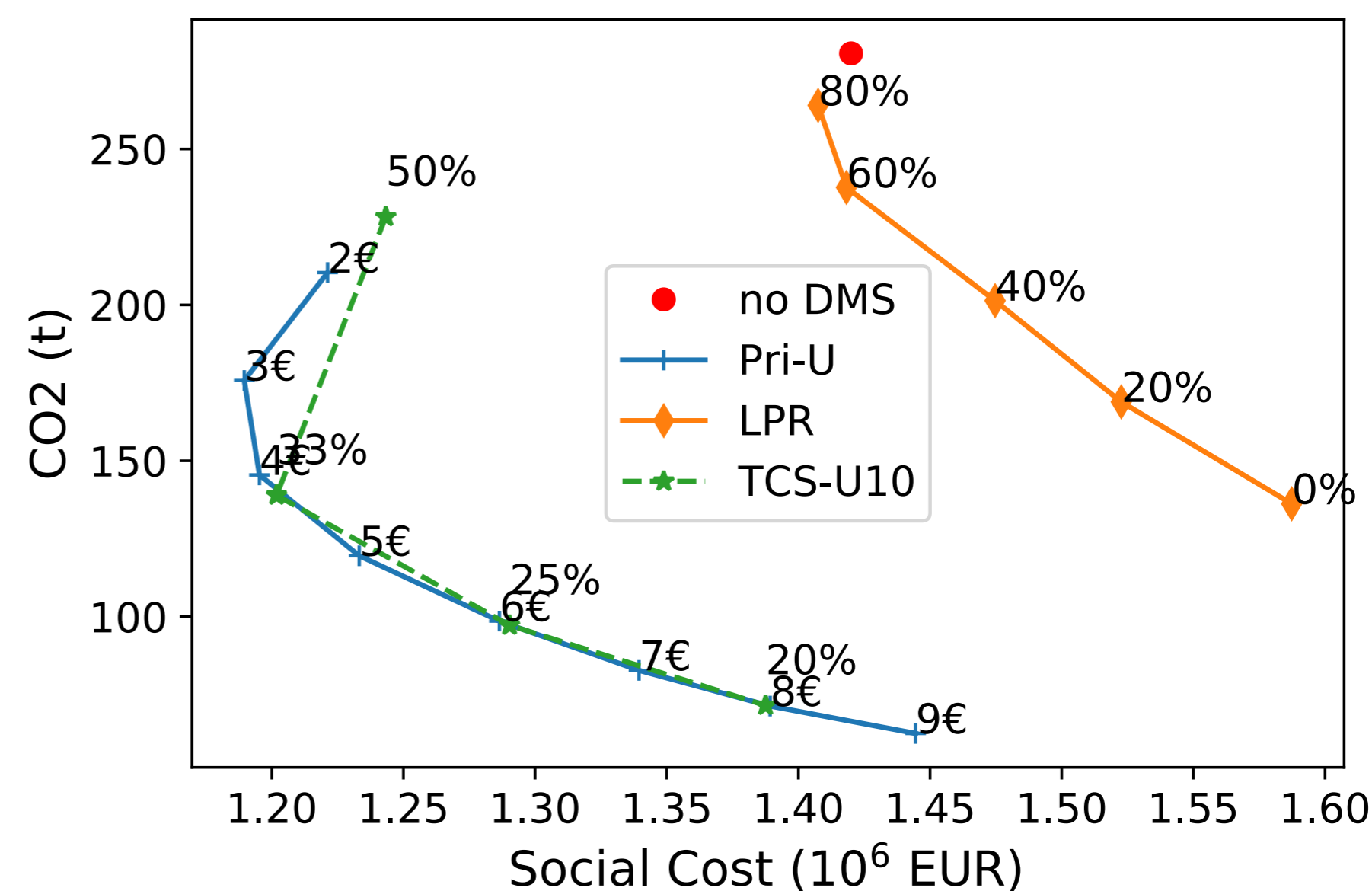
About 380 000 trips.

They can keep their credits for two weeks.

LPR: 20% means 20% of the population is exempted from LPR.

Pricing: 5 EUR means it costs 5 EUR to drive a car.

TCS: 20% means, on average, a driver can drive a car every five days.



Conclusion

Driving a car under TCS is **more flexible** than LPR and **less expensive** than pricing, thanks to the initial allocation and the possibility to use credits over several days.

Future work: departure time choice and dynamic credit charging.

L. Balzer, L. Leclercq, *Modal dynamic equilibrium under different demand management schemes*, Transportation (2022).
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