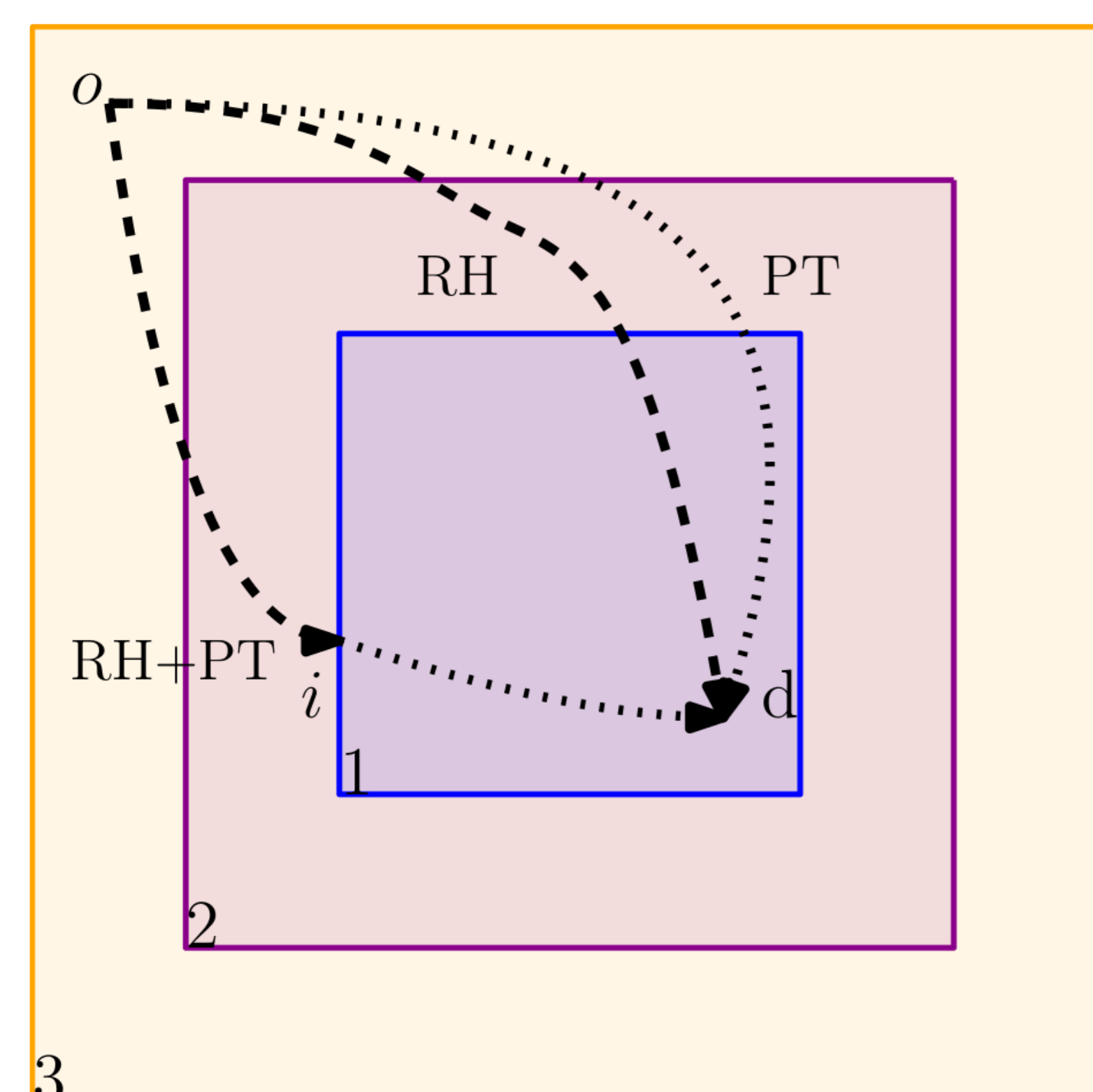


## Motivation

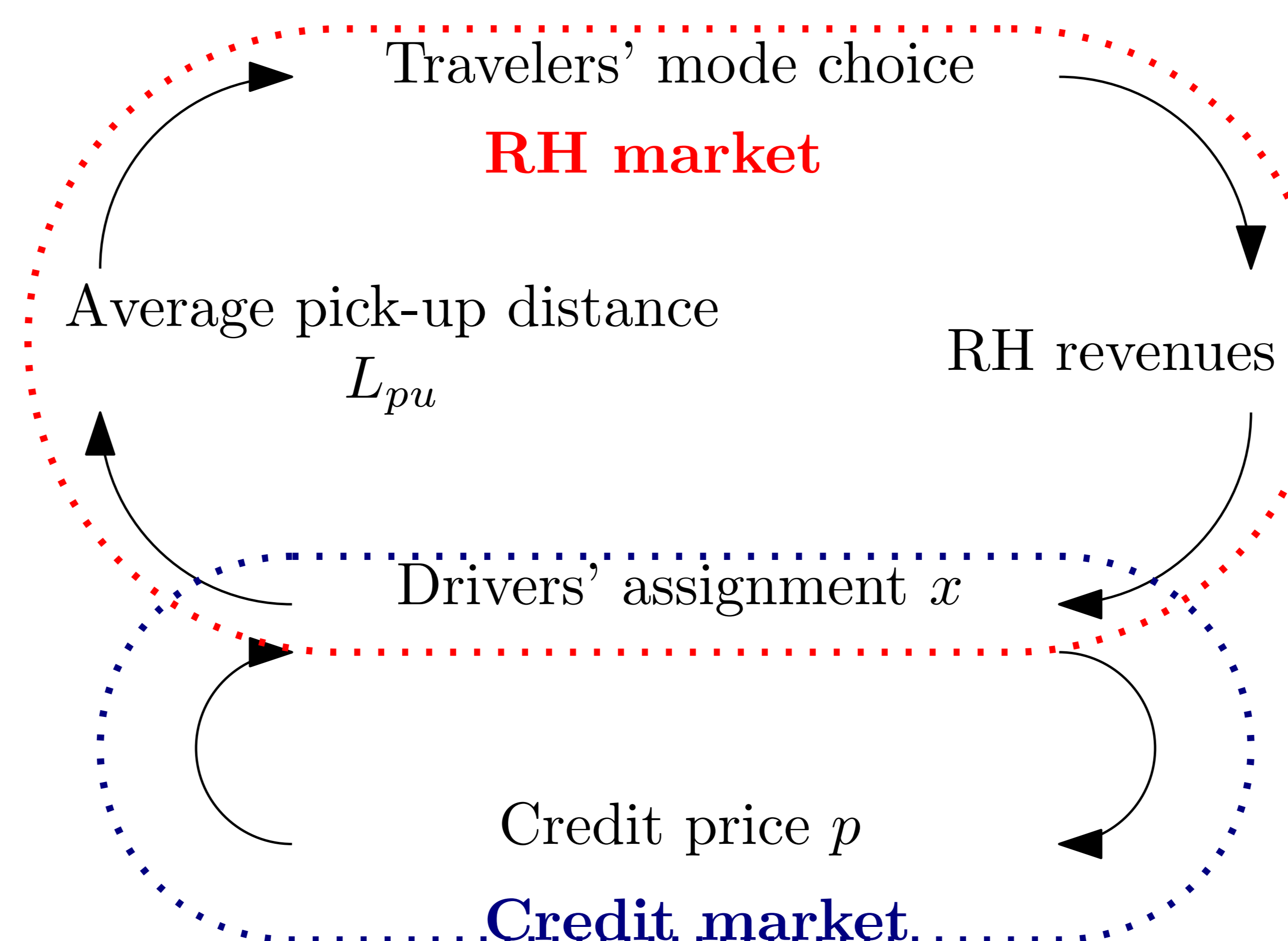
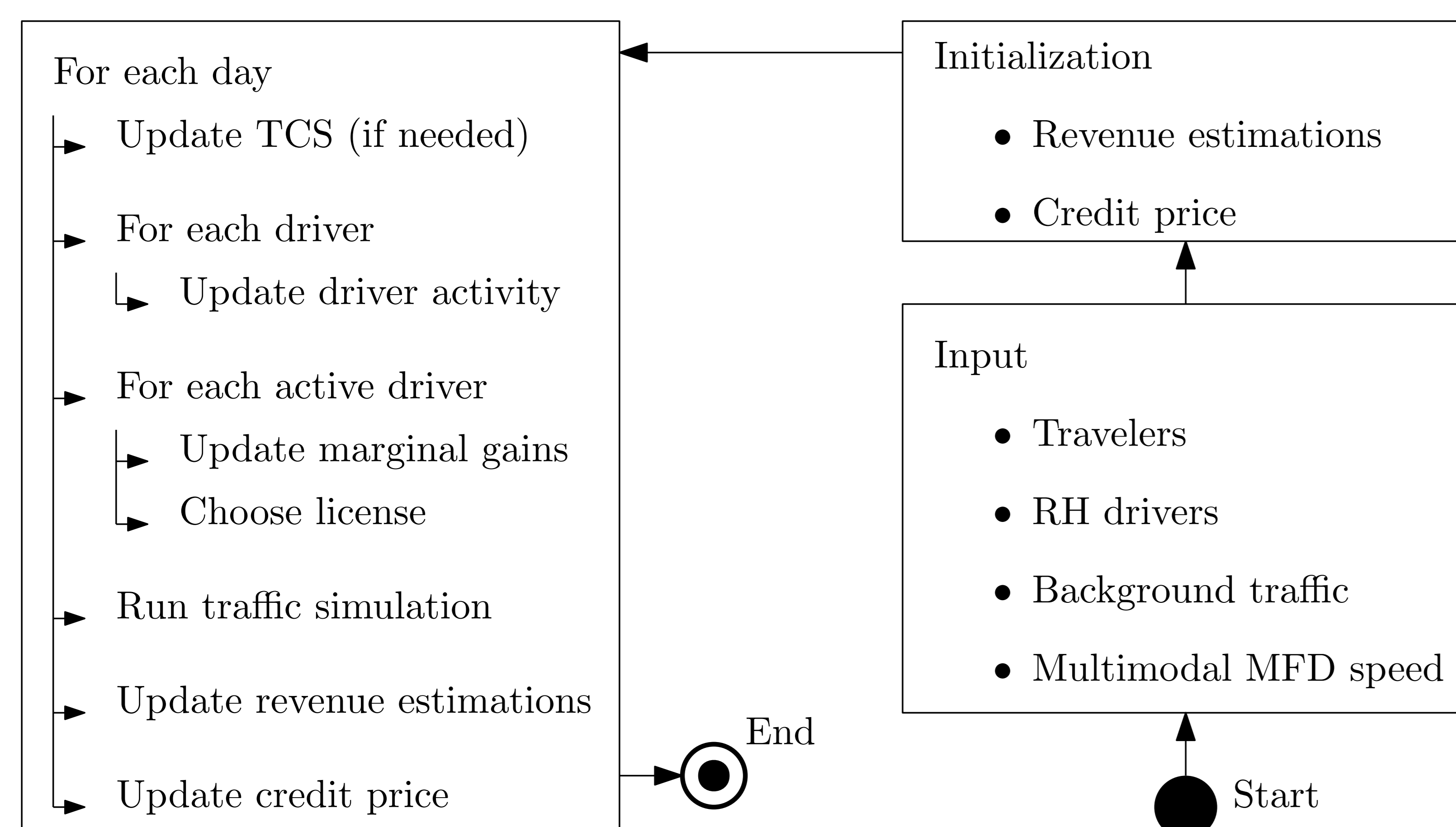
- ✘ Ride-hailing (RH) services may **compete** with public transportation (PT).
- ✘ We propose a Tradable Credit Scheme (TCS) to **promote cooperation** between RH and PT.
- ✘ The goal is to use RH in the suburbs to **complete** the sparse transportation offer.

## Model description and regulation



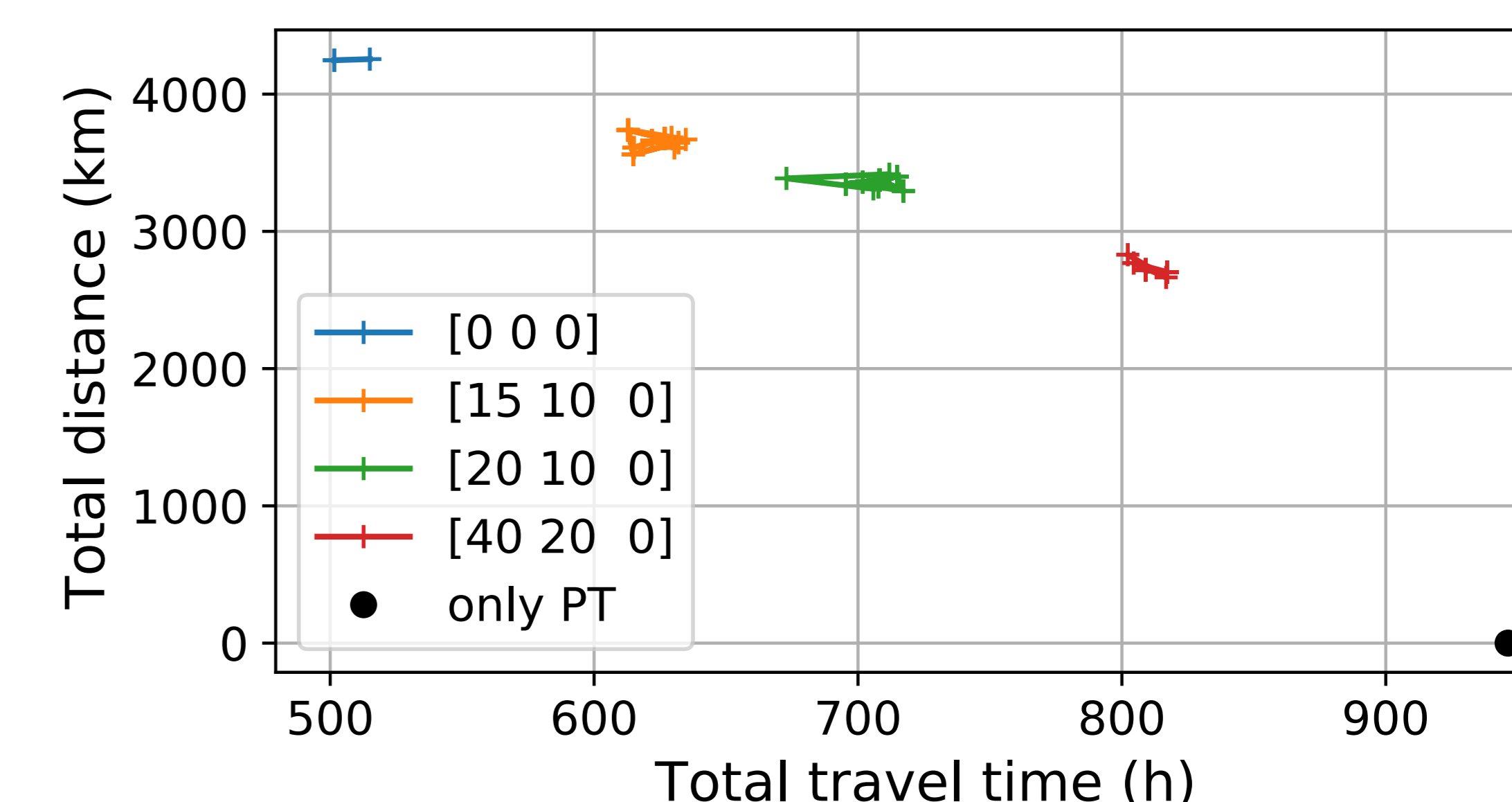
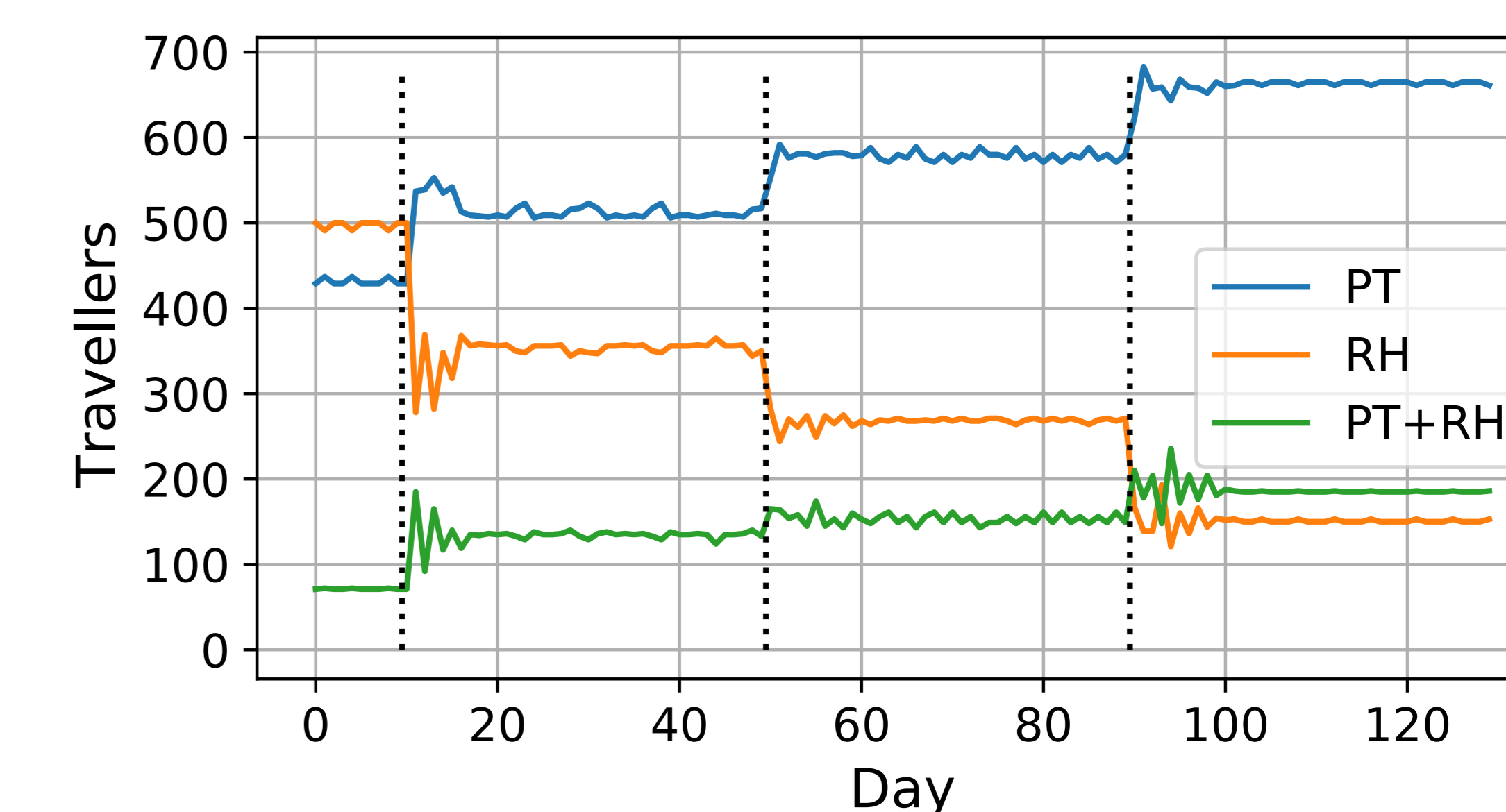
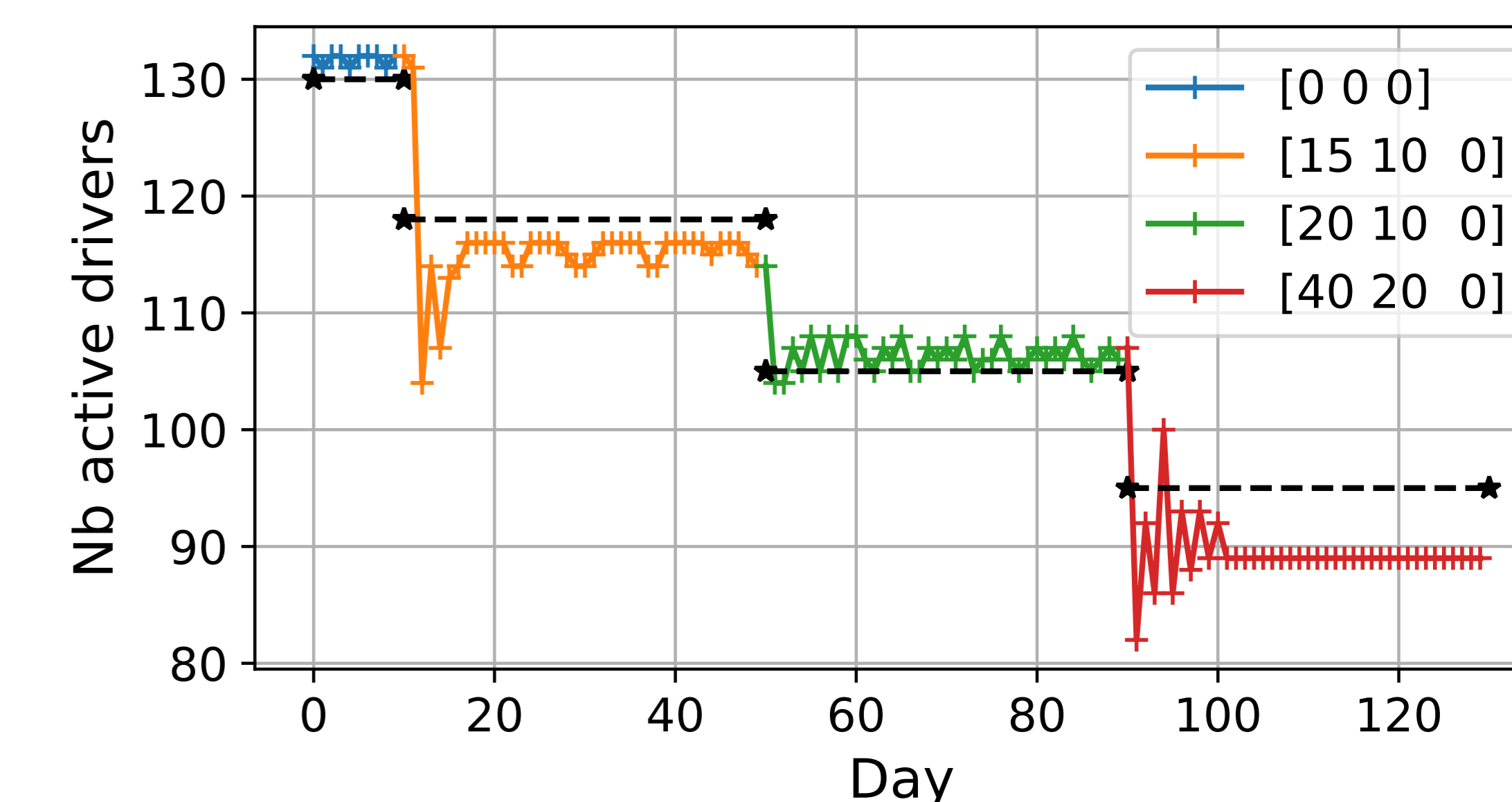
- ✘ Each traveler can use **RH, PT**, or a combination of **RH and PT** to travel from its origin  $o$  to its destination  $d$ .
- ✘ The city is divided into three **concentric regions**. RH drivers need a **license  $lic_r$**  to operate in the regions with an index higher or equal to  $r$ .
- ✘ City model: one reservoir with trip-based MFD.
- ✘ Each active RH driver gets  $\kappa$  **credits**, needs  $\tau_r$  credits to buy license  $lic_r$ . They trade credits with the regulator, which adjusts the price to be budget-neutral.
- ✘ The RH offer is **elastic**: RH drivers can join or leave the service based on the expected RH revenues.
- ✘ RH drivers **choose regions** of operation according to expected gains: RH revenues minus license price.

## Equilibrium computation and day-to-day process



## Results

Allocation  $\kappa$  is 10 credits and the credit charges  $\tau$  are set to [15,10,0] on day 10, [20, 10, 0] on day 50, and finally [40, 20, 0] on day 90.



## Conclusion

- ✘ TCS regulates RH operations to **foster PT and combined trips**.
- ✘ Mitigates RH externalities at the expense of total travel time and provides **trade-offs** between laissez-faire and RH ban.