

# Information design for congested social services

## Motivation

Given that users of social services have heterogeneous needs, can information design help to target the service to those with high need?

In this work:

- stylized queueing model serving users with heterogeneous needs.
- welfare under info. design against simple benchmarks (*full-info* and *no-info*) and the first-best (i.e., centralized admission policies).

Criteria: (ex ante) Pareto dominance.

**Take-away:** With sufficient heterogeneity in need, information design can be powerful in improving overall welfare outcomes.

# Model

Social service provider:

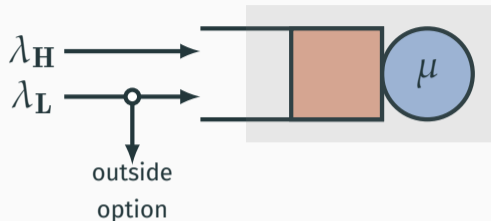
- **unobservable** FCFS queue
- single server, rate  $\mu$

Heterogeneous need for service:

- high-need (**H**): must use the service
- low-need (**L**): have an outside option

No abandonment

$u_i(k)$ : utility from joining, if  $k$  users ahead  
(zero utility for outside option)



Low-need users are **Bayesians**, and maximize expected utility.

SSP's goal: share queue-size information to reduce congestion.

# Results

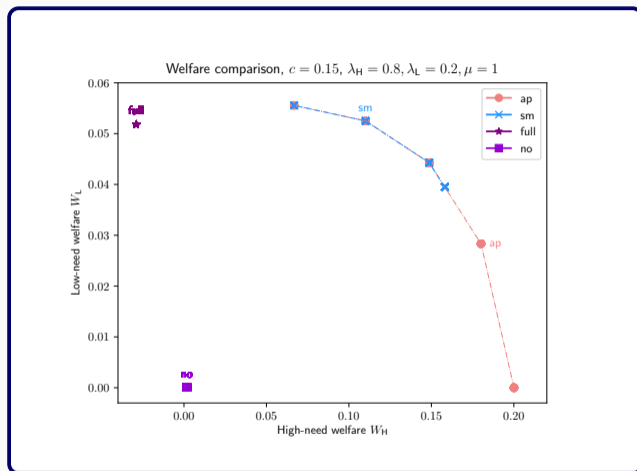
Information design provides Pareto improvement in welfare of all types over the simple mechanisms `no-info` and `full-info`

1. If  $\lambda_H < \bar{\lambda}$ , then `no-info` is Pareto dominated.
2. With enough demand, `full-info` is Pareto dominated.

Under sufficient heterogeneity, information design can coordinate users' actions to achieve the **first-best**:

- same welfare outcomes as centralized admission policies

# Results



$$u_i(n) = 1 - c(n + 1) \text{ for each } i \in \{\mathbf{L}, \mathbf{H}\}.$$