



# Equitable Public Transport Network Reduction (EPTNR)

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# Contributions

## Theoretical

- Problem motivation
- EPTNR formalization
- Objective definition
- Optimization approaches

## Application

- Data generation
- Demo

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# Theoretical



# Problem Motivation

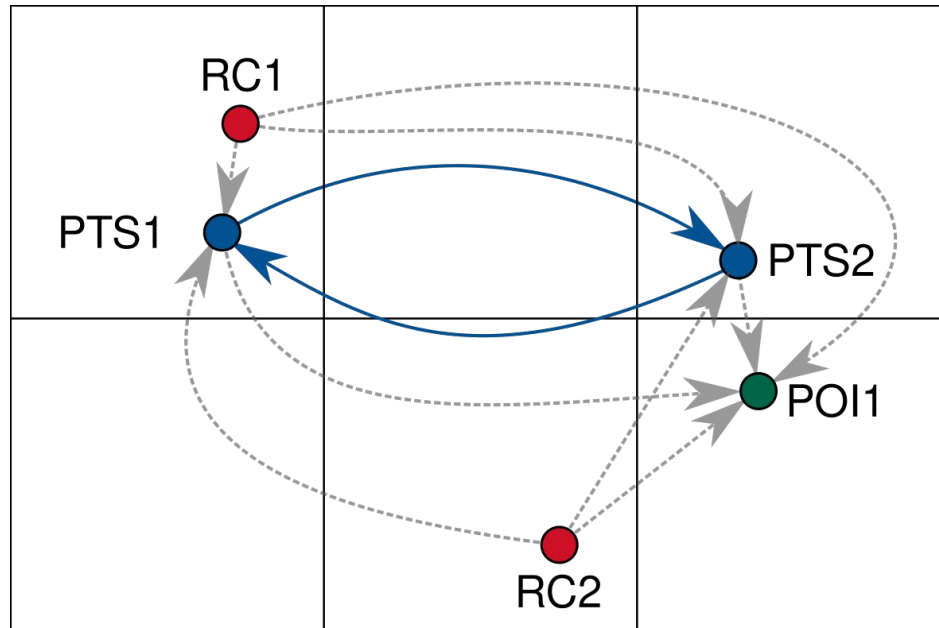
- Declining public transit ridership and budgets
- COVID-19 resulted in steep reduction
- Still not at pre-COVID levels
- **Transit Fiscal Cliff**
  - Operating budget deficit when federal relief runs out

Public Transit Network (PTN) **reduction** is a preferred solution

If PTNs need to be reduced?  
How do we do so **EQUITABLY**?

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## EPTNR Formalization





## Objective definition

- PTN reduction is required (budget, assets, etc.)
- Reduce up to **budget k** PTN edges
- Maintain or improve equality of access



# Optimization Approaches

- Exhaustive search
- Search, linear programming, dynamic programming, etc.
- Genetic algorithms, reinforcement learning, etc.



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# Application



# Datasets

- OSM data for street and points of interest
  - US census data for neighborhoods
  - Transitland for Atlanta's MARTA GTFS
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- No GMNS due to missing PTN data
  - No ARC data for applicability to other cities

# DEMO

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