



# Public Transit Fare Reductions' Effect on Ridership

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## Motivation

Over the past decade transit ridership has declined by 15 percent: a trend accelerated by the pandemic. An influx of federal funding for transit as a result of the pandemic enabled localities to experiment with new pricing, including fare elimination, in the pursuit of transit equity.

## Research Question

How do fare reductions affect public transportation bus ridership?

## Data

Ridership: National Transportation Database Monthly Module Adjusted Data Release (July 2022)

Fares: Telephone survey of transit agencies regarding historical fare pricing

## Methodology

We utilize two event studies to assess the impacts of a fare reduction and a fare elimination. Ridership is seasonally adjusted. For the fare elimination event study, ridership is transformed into a month-over-month percent change to adjust for pandemic ridership impacts. The below event study equation was used where  $t \neq 1$ .

$$ridership = \alpha + \sum_t^T \mathbb{1}(k = t) + x'\beta + \epsilon$$

## Discussion

- In the short term, the partial fare reduction event study suggests a statistically significant increase in ridership variance post-event.
- Changes in fares are generally implemented as part of a staggered package of service changes would could increase uncertainty and thus ridership variance.
- The fare elimination event study shows an initial decline in ridership coincident with the emergence of the pandemic in the studied localities.
- The absence of a further decline 5 to 10 months post-event suggests that the fare elimination may have played a role in mitigating the the extent of ridership reduction.

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## Results

