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.

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 ≠ 1.

\[
\text{ridership} = \alpha + \sum_{t} 1(k = t) + x'\beta + \epsilon
\]

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.

Results

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

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