

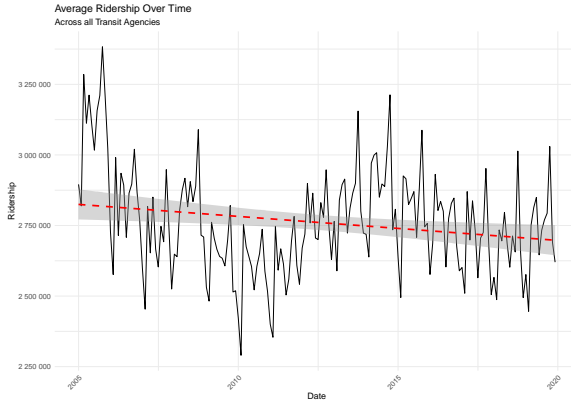
TNC Integration and Subsidization as a Compliment to Public Transportation

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Background

- ▶ Declining Public Transportation Usage
- ▶ Corresponds with the rise of Transportation Network Companies (TNCs)



Background

- ▶ Public transit companies partner with TNCs
 - ▶ Pinellas County subsidies
 - ▶ Atlanta, GA MARTA on the Go



Literature

- ▶ Erhardt, et al. (2022) claim TNCs are the biggest driver of transit ridership decline using NTD data
- ▶ Hall, et al. (2018) find that TNCs are a net compliment to public transit but lots of variation using diff-in-diff
- ▶ Zhao (2019) finds that TNCs are a compliment to good transit, substitute to bad using monocentric city model
- ▶ Agrawal, et al. (2023) finds that subsidizing TNCs increases ridership substantially using monocentric city model

Research Question

- ▶ What is the effect on ridership for public transportation agencies that partner with TNCs?
 - ▶ Subsidies
 - ▶ Promotion(?)

Methodology

- ▶ Difference-in-difference
 - ▶ Treatment: Public transportation agencies that partner with TNCs
 - ▶ Control: Public transportation agencies that do not partner with TNCs
 - ▶ Time: Before and after partnership
- ▶ Considerations
 - ▶ Subsetting the dataset
 - ▶ Partnership times. Will there be enough data post treatment?

Data Sources

- ▶ National Transit Database (NTD)
 - ▶ Contains monthly ridership data from 2005-2019 for all public transportation agencies that receive federal funding
- ▶ American Community Survey (ACS)
 - ▶ Contains yearly demographic data for all urbanized areas (+65,000 population)
 - ▶ Consider using CPS (monthly)

```
## # A tibble: 6 x 26
##   agency      date      ridership ntd_id legacy_ntd_id st
##   <chr>    <date>      <dbl> <chr>   <chr>      <c
## 1 2Plus Pa~ 2008-01-01      1144 10110   1110      In
## 2 2Plus Pa~ 2008-02-01      1092 10110   1110      In
## 3 2Plus Pa~ 2008-03-01      1050 10110   1110      In
## 4 2Plus Pa~ 2008-04-01      1100 10110   1110      In
## 5 2Plus Pa~ 2008-05-01      1056 10110   1110      In
## 6 2Plus Pa~ 2008-06-01      1008 10110   1110      In
## # i 20 more variables: reporter_type <chr>, uace_cd <chr>
## #   uza_name <chr>, city <chr>, state <chr>, mode <chr>
## #   ...
```

Preliminary Results

- ▶ Limited to FL
- ▶ Diff-in-diff of Pinellas County vs. rest of FL

```
##                                didreg
## Dependent Var.:                ridership
##
## Constant                      2,235,049.5*** (29.2)
## pop                          0.372*** (17.9)
## white                       -3,989,205.8*** (-50.7)
## med_house_income             26.0*** (22.2)
## poverty                     -1.97*** (-10.9)
## treated                     414,098.4*** (19.0)
## time                       -465,046.5*** (-24.8)
## treated x time               -37,688.4 (-0.787)
## Fixed-Effects:  -----
## month                        No
## -----
## VCOV type                    IID
## Observations                 13,732
```


Potential Issues

- ▶ Classifying partnerships/finding information (changes over time)
- ▶ Ensuring that all agencies are classified as treated or control correctly

References

[Agrawal and Zhao, 2023] Agrawal, D. R. and Zhao, W. (2023). Taxing uber. *Journal of Public Economics*, 221:104862.

[Erhardt et al., 2022] Erhardt, G. D., Hoque, J. M., Goyal, V., Berrebi, S., Brakewood, C., and Watkins, K. E. (2022). Why has public transit ridership declined in the united states? *Transportation Research Part A: Policy and Practice*, 161:68–87.

[Hall et al., 2018] Hall, J. D., Palsson, C., and Price, J. (2018). Is uber a substitute or complement for public transit? *Journal of Urban Economics*, 108:36–50.

[Zhao, 2019] Zhao, W. (2019). The long run effects of uber on public transit, congestion, sprawl, and the environment.