

# Public transit effects on homeownership, credit

## NSF Proposal, Fall 2023

Kyra Sadovi

March 22, 2023

# Outline

## Brief Explanation of the NSF Application Process

## Research idea: Public transit effects on homeownership, credit

- Introduction

- Trains

- Buses

## Problems, possible variations

- Property value endogeneity

- Dependent variables

## Brief Explanation of the NSF Application Process

Research idea: Public transit effects on homeownership, credit

Problems, possible variations

# The NSF Application

- ▶ Application composed of:
  1. **Research proposal**
  2. Personal statement
  3. Letters of recommendation
- ▶ Two evaluation criteria:
  1. Intellectual merit: How important is the proposed activity to advancing knowledge within its own field or across different fields?
  2. Broader impacts: How well does the proposed activity benefit society or advance desired societal outcomes?
- ▶ These criteria are weighted **equally**.
- ▶ I can assume I have access to any data I could want.

## Brief Explanation of the NSF Application Process

Research idea: Public transit effects on homeownership, credit

Introduction

Trains

Buses

Problems, possible variations

# Research idea

- ▶ I am interested in measuring the effect of increased access to public transit on residents' credit health and the local homeownership rate.
- ▶ **Existing** residents only.
- ▶ Credit Risk Insight Servicing McDash (CRISM), Equifax CCP, WalkScore ©.

## Existing literature

- ▶ Chetty et al. find that transportation has a significant impact on economic mobility<sup>1</sup>.
- ▶ It has also been demonstrated to have effects on local employment outcomes, particularly job retention.<sup>2</sup>

---

<sup>1</sup>Chetty et al., *Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States*.

<sup>2</sup>Sanchez, "The Connection Between Public Transit and Employment".

# Trains vs. Buses



# Trains

## Advantages of trains:

- ▶ Commuters tend to value trains more than buses<sup>3</sup>.
- ▶ They comprise a larger investment (broader impact).

## Disadvantages of trains:

- ▶ They comprise a larger investment (harder to find controls).
- ▶ Relatively few examples to use.
- ▶ Examples that do exist are not all the same (light rail vs commuter rail, areas serviced, etc.).

---

<sup>3</sup>Brooks and Denoeux, “What if you build it and they don’t come? How the ghost of transit past haunts transit present”.

# Proposed approach to trains

- ▶ Treatment case: a neighborhood where a new train station is built.
- ▶ Control: a neighborhood where a new train station is proposed but either delayed or cancelled.

Create a synthetic treatment group<sup>4</sup>:

- ▶ Create a dataset of examples of failed or postponed transit projects.
- ▶ Weight characteristics of control units to match treated, e.g.:
  - ▶ Pre-treatment average income of area served.
  - ▶ Pre-treatment homeownership rate of area served.

---

<sup>4</sup>Gunsilius, *Distributional synthetic controls*.

# Buses

## Advantages of buses:

- ▶ Significantly more examples of new bus lines.
- ▶ Much less anticipatory investment needed, so I posit that property values would be less likely to change significantly.
- ▶ Because less anticipatory investment, could simply compare area affected to immediately adjacent unaffected area – no need to find cancelled lines.
- ▶ Bus rapid transit (BRT) is en vogue in many cities now<sup>5</sup>.

## Disadvantages of buses:

- ▶ Commuters prefer trains, so treatment effect could potentially be smaller.

---

<sup>5</sup>Padeiro, Louro, and da Costa, “Transit-oriented development and gentrification: a systematic review” .

## Brief Explanation of the NSF Application Process

Research idea: Public transit effects on homeownership, credit

### Problems, possible variations

- Property value endogeneity

- Dependent variables





# Property value endogeneity

- ▶ While I could control for property value increase after announcement of project, I would have a harder time isolating effects of the project on credit and homeownership from property value increases that are due to the physical opening of the station.
- ▶ Primarily a problem with train example.

## Dependent variables: What would be the most interesting measure?

- ▶ Existing homeowners:
  - ▶ Rates of successful refis
  - ▶ Rates of mortgage delinquency
- ▶ Existing renters:
  - ▶ Rates of homeownership (incl. if they move away)
- ▶ All existing residents:
  - ▶ Rates of delinquency on various types of credit lines (credit cards, auto loans, etc)

# References I

-  Brooks, Leah and Genevieve Denoeux. “What if you build it and they don't come? How the ghost of transit past haunts transit present”. In: *Regional Science and Urban Economics* 94 (2022). Urban Economics and History, p. 103671. ISSN: 0166-0462. DOI: <https://doi.org/10.1016/j.regsciurbeco.2021.103671>. URL: <https://www.sciencedirect.com/science/article/pii/S0166046221000314>.
-  Chetty, Raj et al. *Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States*. Working Paper 19843. National Bureau of Economic Research, Jan. 2014. DOI: 10.3386/w19843. URL: <http://www.nber.org/papers/w19843>.
-  Gunsilius, Florian. *Distributional synthetic controls*. 2021. arXiv: 2001.06118 [econ.EM].
-  Padeiro, Miguel, Ana Louro, and Nuno Marques da Costa. “Transit-oriented development and gentrification: a systematic review”. In: *Transport Reviews* 39.6 (2019), pp. 733–754. ISSN: 0144-1647. DOI: <https://doi.org/10.1080/01441647.2019.1649316>. URL: <https://www.sciencedirect.com/science/article/pii/S014416472200157X>.

## References II



Sanchez, Thomas W. “The Connection Between Public Transit and Employment”. In: *Journal of the American Planning Association* 65.3 (1999), pp. 284–296. DOI: 10.1080/01944369908976058. eprint: <https://doi.org/10.1080/01944369908976058>. URL: <https://doi.org/10.1080/01944369908976058>.