Where Do Bike Share Trips Come From?

David A. King
Juan Francisco Saldarriaga
GSAPP
Columbia University

2014 Ground Transportation Technology Summit

November 19, 2014
### System Coverage (Square Miles)

- **Boston**: 25.5
- **Chicago**: 44.1
- **Washington DC**: 71.4
- **New York**: 16.8
- **San Francisco**: 6.2
- **San Jose**: 8.5

### Number of Bicycles

- **Boston**: 1,300
- **Chicago**: 3,000
- **Washington DC**: 2,500
- **New York**: 6,000
- **Bay Area**: 700

### Number of Bike Share Stations

- **Boston**: 131
- **Chicago**: 300
- **Washington DC**: 321
- **New York**: 330
- **San Francisco**: 42
- **San Jose**: 28

### Number of Trips in 6 Months

- **Boston**: 750,000
- **Chicago**: 730,000
- **Washington DC**: 1,000,000
- **New York**: 2,950,000
- **Bay Area**: 200,000
Asymmetric O-D Travel
System Imbalance Due to One-Way Travel
Station Imbalance Not Evenly Distributed
Citibike and Taxis: Complements or Substitutes?

- Identify similar O-D pairs for taxi and Citibike trips
  - In sample: Grand Central Terminal-PA Bus Terminal
- Isolate single rider taxi trips
- Look at data by time of day
  - Assumption: bike share will be more recreational on weekends relative to weekdays
2011: Taxi Trips
2012: Taxi Trips
2013: Taxi trips and Citibike usage
Citibike trips are likely substitutes for some taxi trips
Conclusions

• Bike share trips are likely substituted away from existing transport options for Midtown weekday travel
• Overall measured effect is small
  – Not many O-D trips
• Bike share trips share asymmetric characteristics with taxi trips
• Unobserved effects are likely large