

TNCs Today: A Profile of San Francisco Transportation Network Company Activity

TRB Innovations in Travel Modeling 2018
Atlanta, GA



SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY
June 26, 2018

Purpose + Need



- ▶ **TNCs very visually present**
- ▶ **Data exists, but not forthcoming**
- ▶ **Research Questions:**
 - ▶ **Number of vehicles**
 - ▶ **Number of trips**
 - ▶ **When and Where**
 - ▶ **VMT**
 - ▶ **Geographic Coverage**

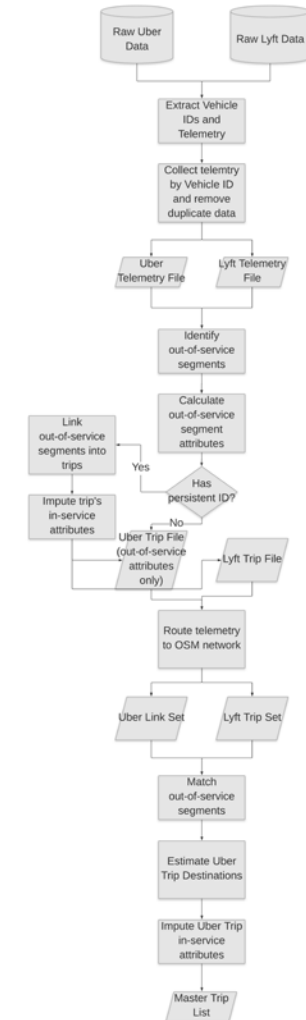
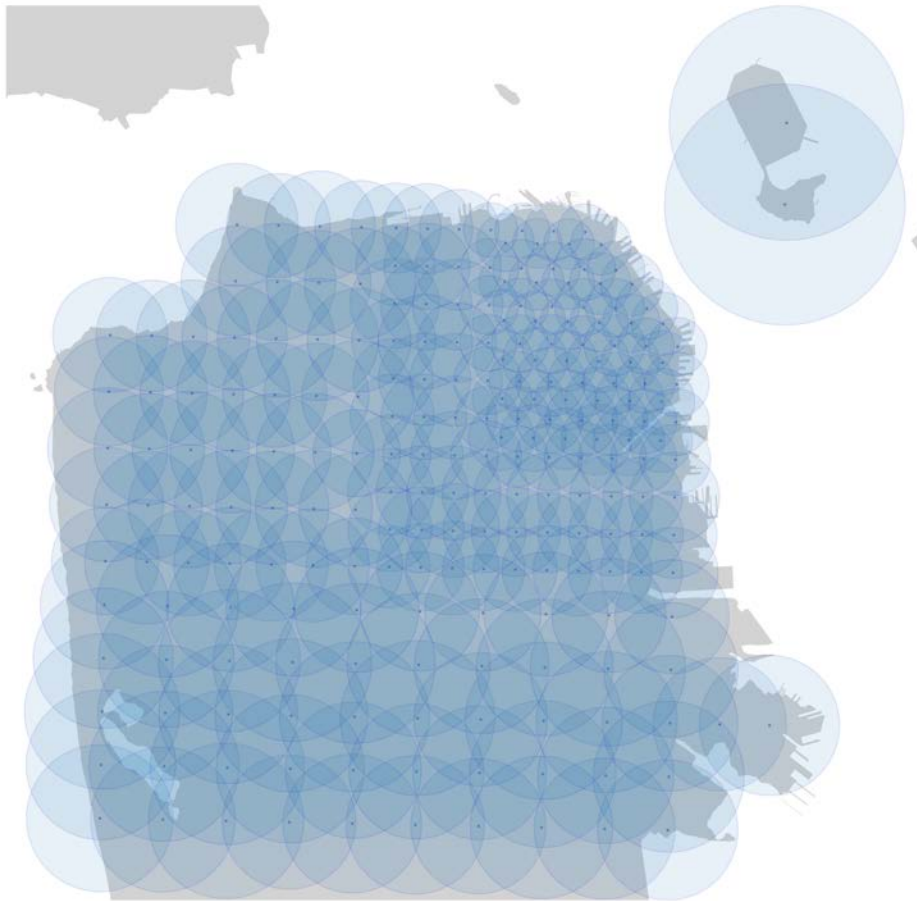


Data Collection + Methodology



- ▶ **Data/Research Partnership with Northeastern University**
 - ▶ Collected GPS data from Lyft/Uber APIs
- ▶ **Used data to estimate trips**
- ▶ **Limitations**
 - ▶ Intra-SF only
 - ▶ Trip details are imputed
 - ▶ No info about travelers, chosen product, vehicle occupancy

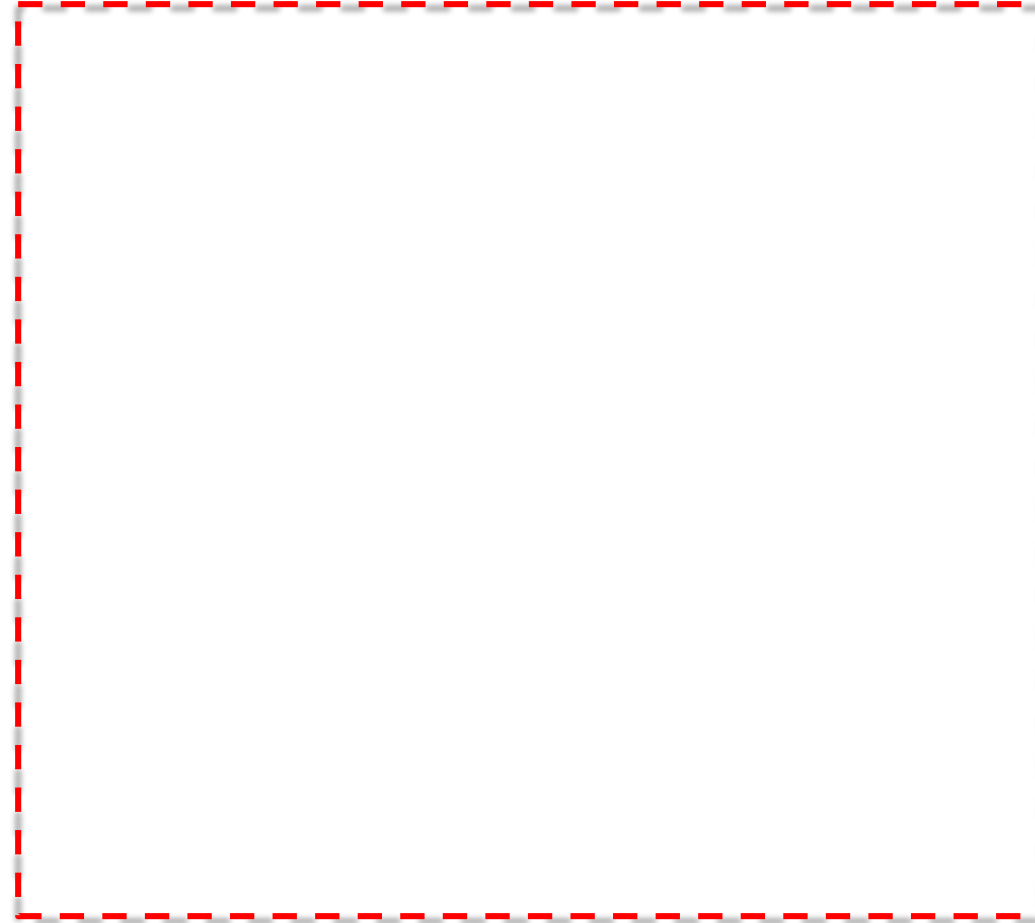
Data Collection + Methodology



Data Collection + Methodology



- ▶ **Create Uber and Lyft telemetry files**
 - ▶ Group data by vehicle id
 - ▶ Remove duplicates



Data Collection + Methodology



► Impute Trips

- Identify out-of-service segments and “gaps” in data
- Calculate out-of-service attributes
- Link related segments
- Estimate Lyft in-service attributes



Data Collection + Methodology



- ▶ **Match Uber and Lyft trips to each other**
 - ▶ Route on OSM map
 - ▶ Match out-of-service segments



Data Collection + Methodology



- ▶ **Estimate Uber in-service attributes**
 - ▶ Develop flow matrix with Lyft data
 - ▶ IPF to match Uber origin and destination totals
 - ▶ Estimate trip distance from flows



How Many?



► How many TNCs operate in San Francisco Today?

- 21,000 – 45,000 drivers (or more)
- 29% live in SF
- 10% live outside of Bay Area
- 6,500 vehicles at busiest time

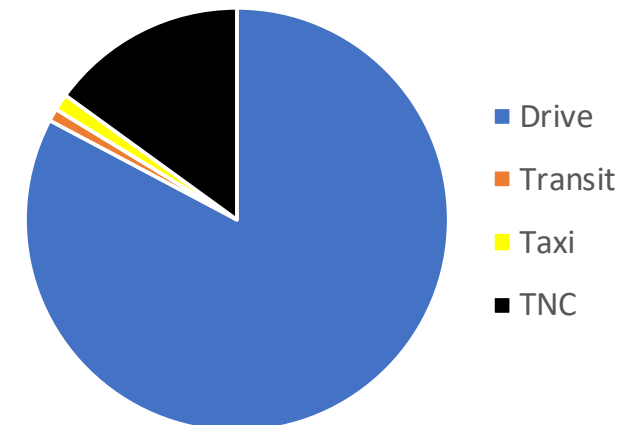
► How many TNC trips are occurring?

- 170,000 trips on a typical day
- 15% of intra-SF vehicle trips

Estimated SF-Registered TNC Businesses

	%
Alameda	21%
Contra Costa	12%
Marin	2%
Napa	0%
San Francisco	29%
San Mateo	16%
Santa Clara	6%
Solano	2%
Sonoma	1%
Outside Bay Area	10%
Total	100%

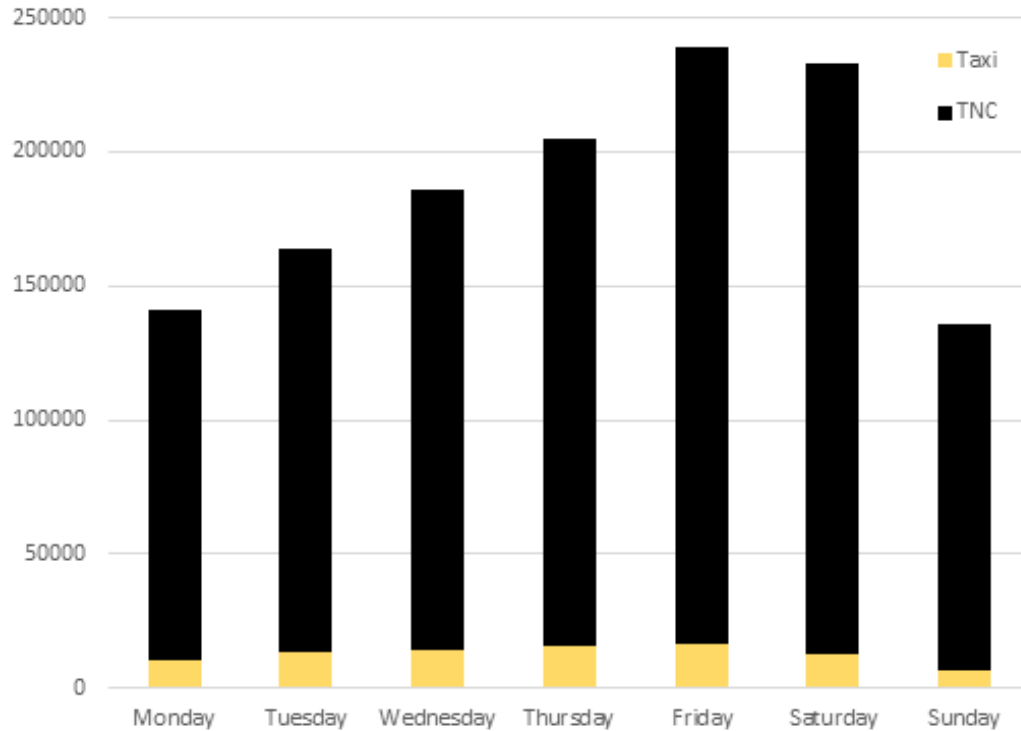
Vehicle Trips by Mode



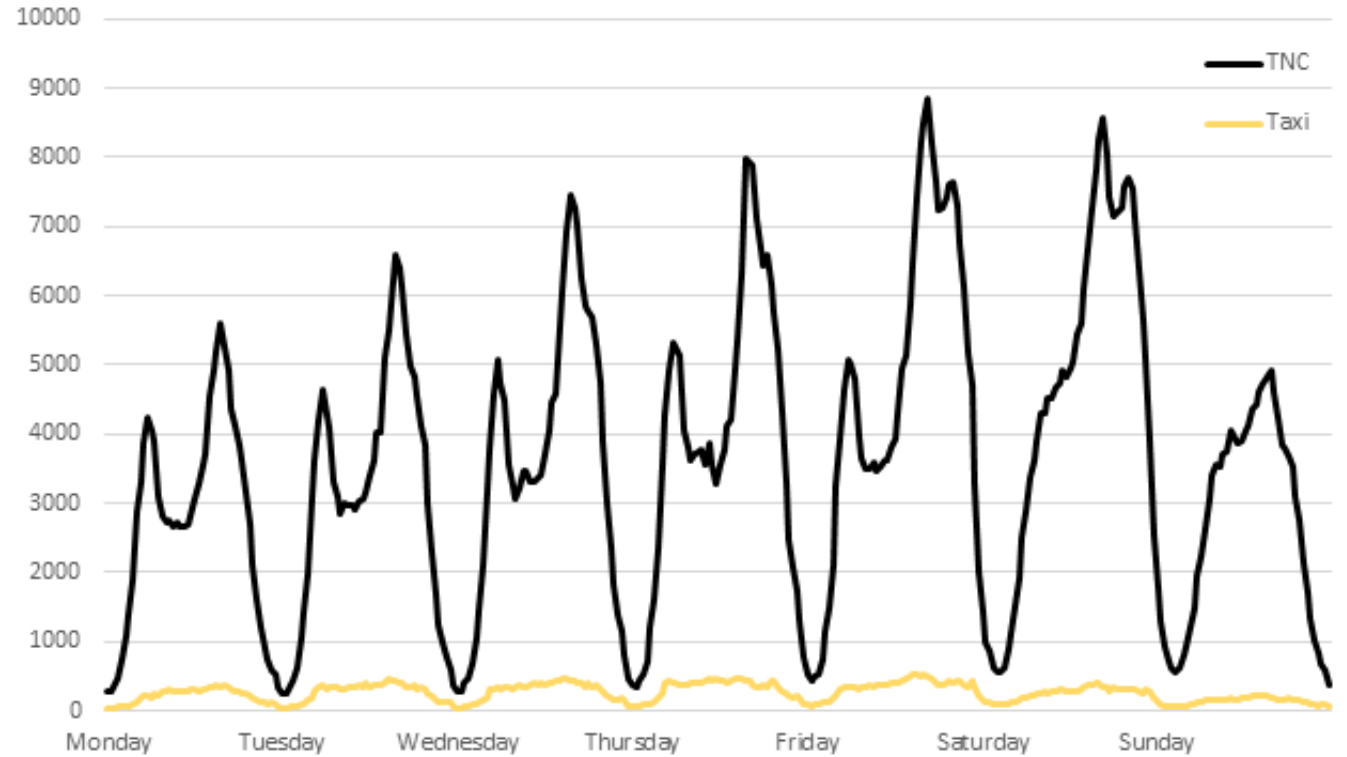
When are TNC trips occurring?



Intra-SF TNC Trips by Day-of-Week



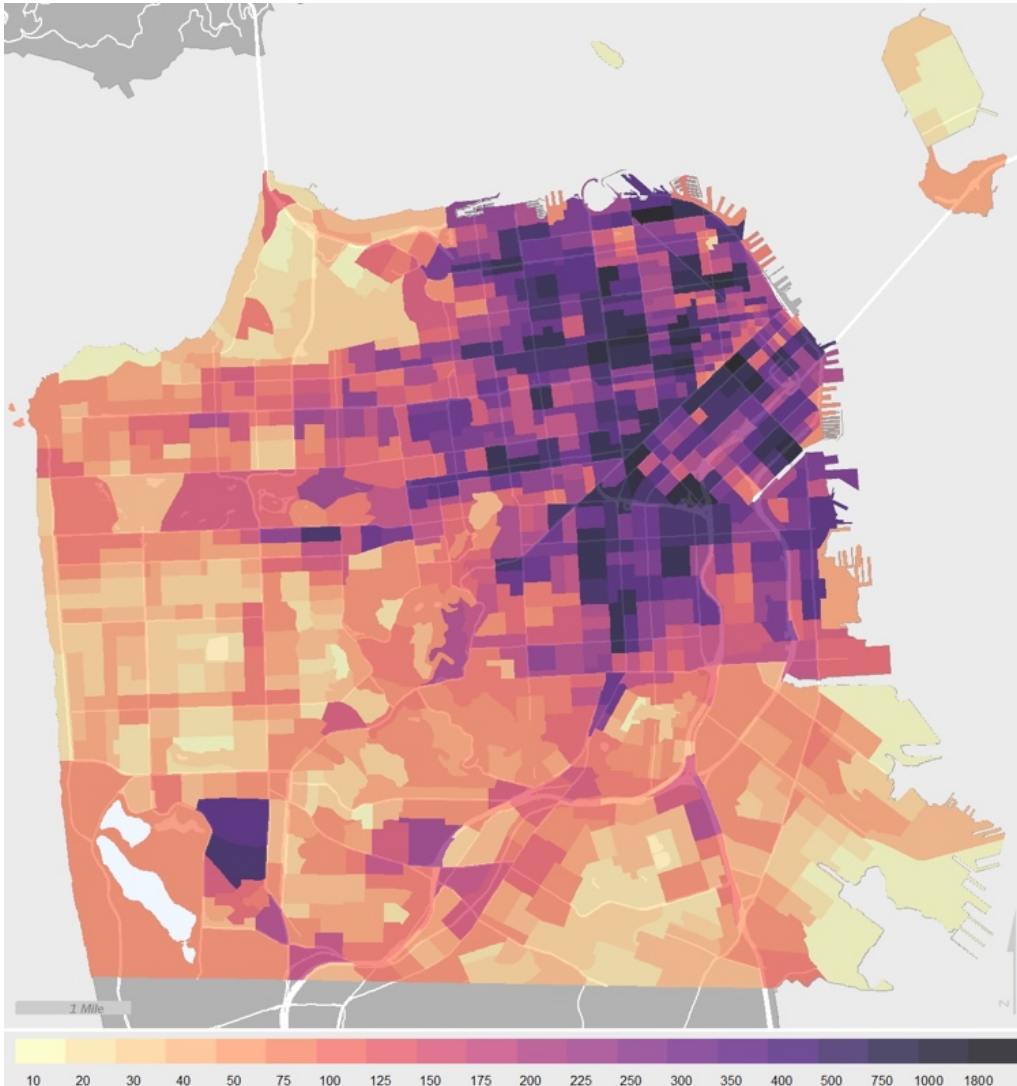
Intra-SF TNC Trips by Time-of-Day and Day-of-Week



Where are TNC trips occurring?



Daily TNC Trip Origins by TAZ



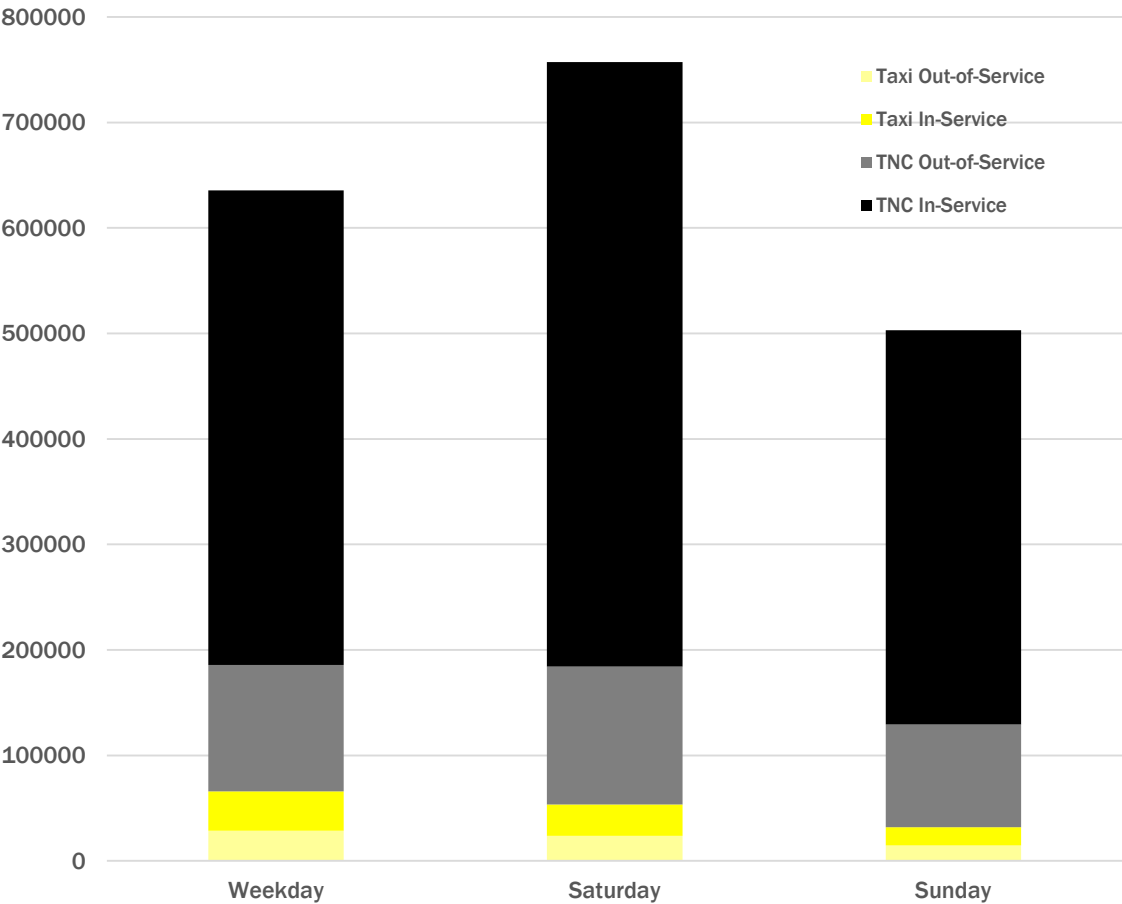
Daily TNC Trip Heatmap



How many vehicle-miles traveled?



Intra-SF TNC & Taxi VMT by Day-of-Week



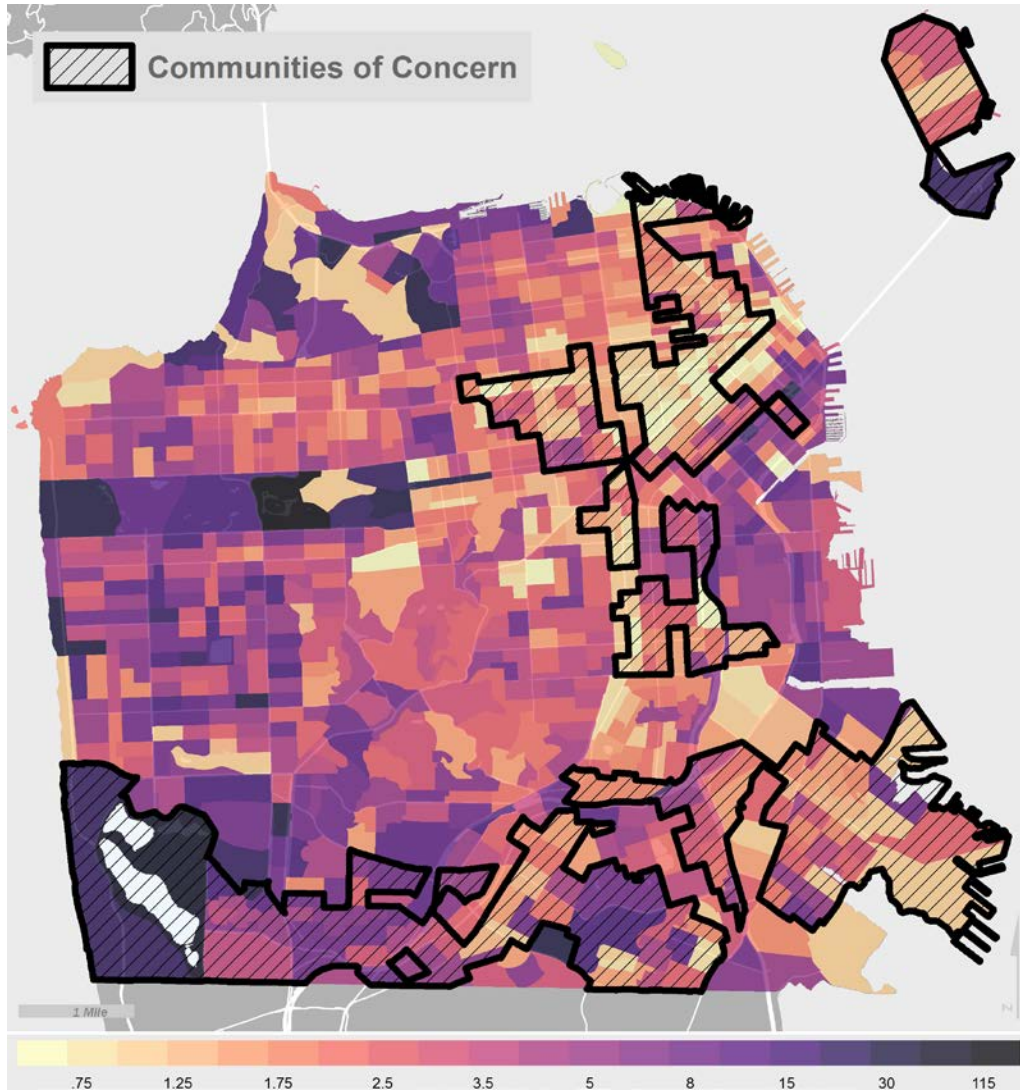
Intra-SF TNC & Taxi Trip Length

	TNCs	Taxis
Trips	170,400	14,400
VMT	569,700	65,900
Average Total Trip Length	3.3	4.6
Average In-service Trip Length	2.6	2.6
Average Out-of-Service Trip Length	0.7	2.0
% Out-of-Service Trips Length	21.0%	43.6%

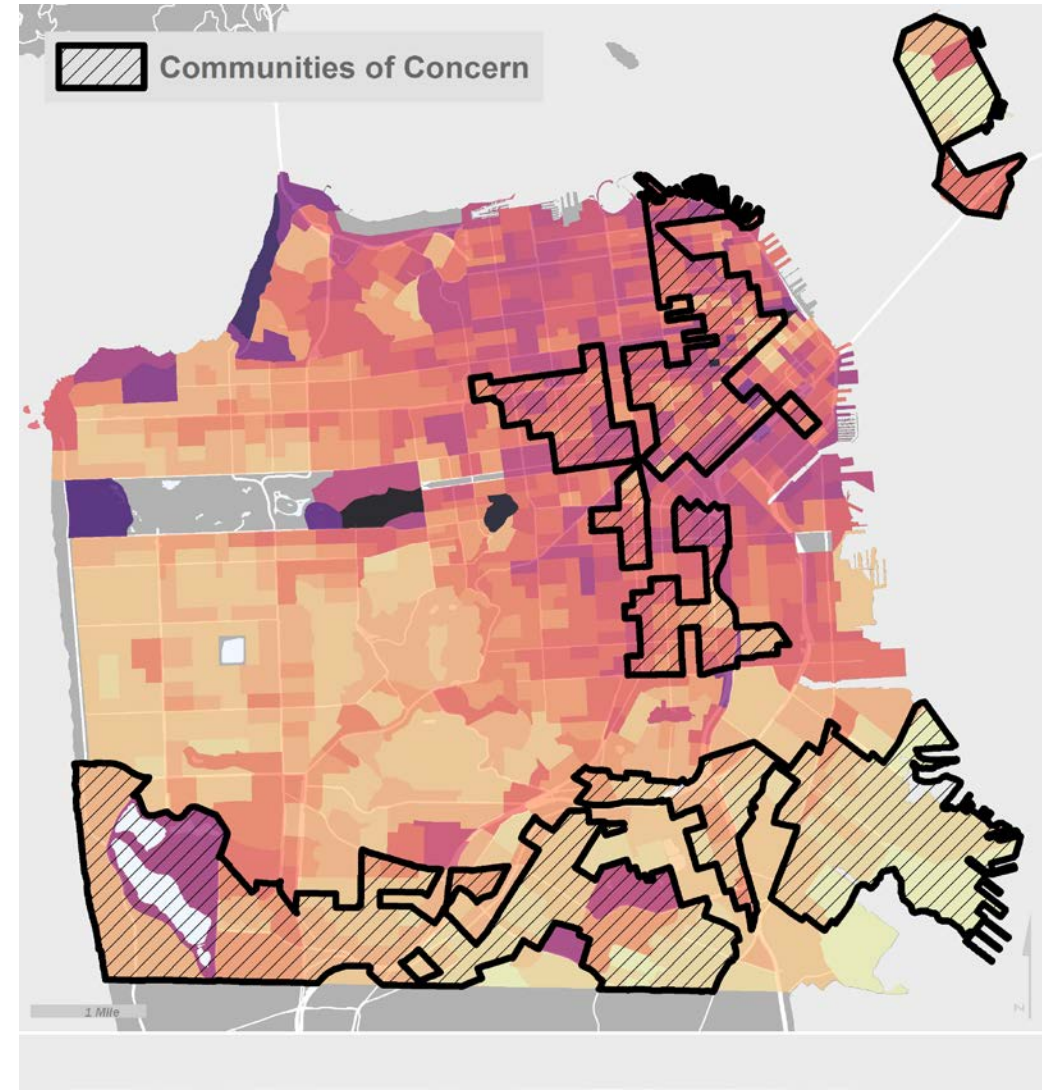
Do TNCs Provide Geographic Coverage



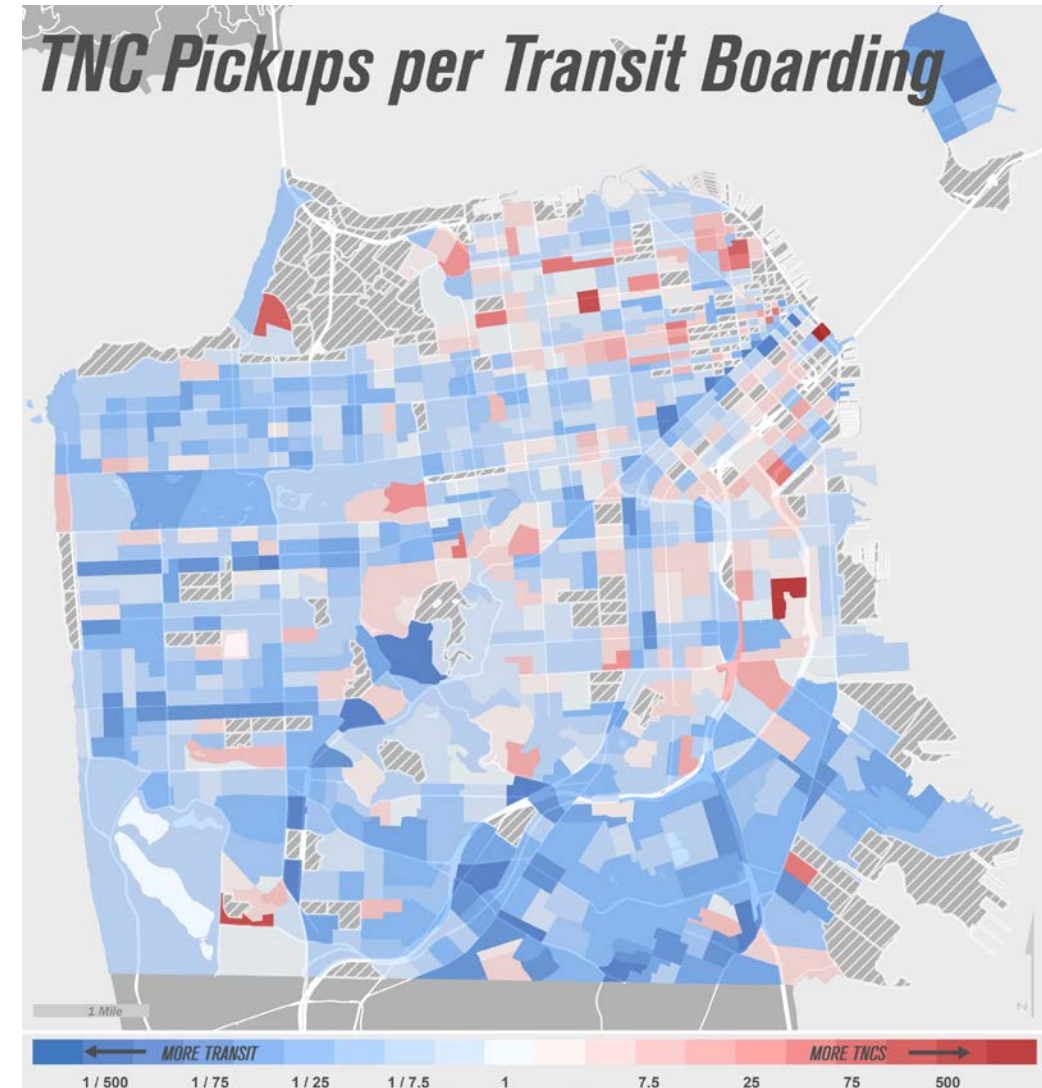
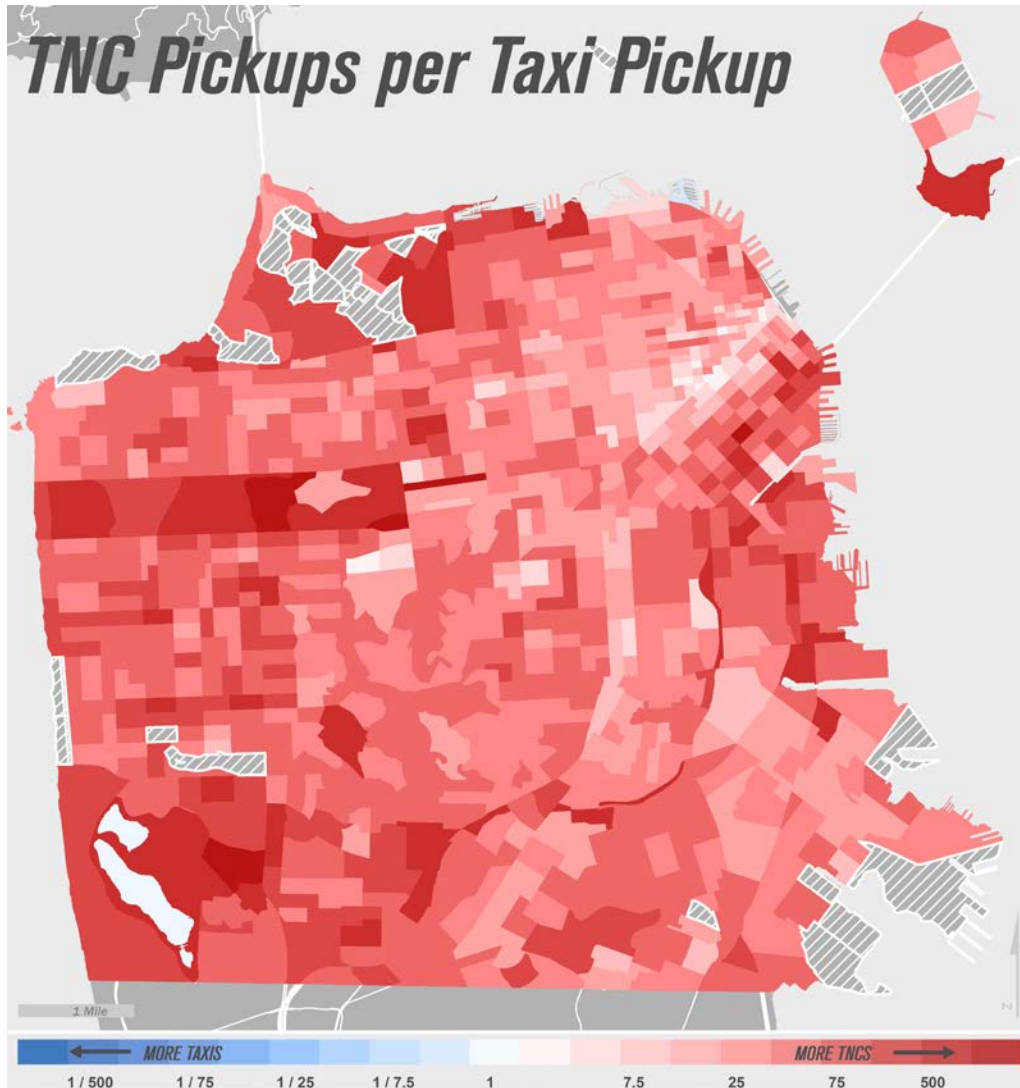
TNC Pickups per Taxi Pickup



TNC Pickups per Population + Employment



How do TNCs Compare to Taxis and Transit?



Future Research



- ▶ **TNCs and Safety:** How do TNCs affect the safety of people who use the roads, including transit riders, bicyclists and pedestrians?
- ▶ **TNCs and Transit Demand:** How do TNCs complement, compete with, or otherwise affect transit ridership?
- ▶ **TNCs and Transit Operations:** How do TNCs affect transit service operations?
- ▶ **TNCs and Congestion:** How do TNCs affect roadway congestion, delay, and travel time reliability?
- ▶ **TNCs and Disabled Access:** To what extent do TNCs serve people with disabilities?
- ▶ **TNCs and Equity:** Can TNCs be accessed by all San Francisco residents including communities of concern?
- ▶ **TNCs and Air Quality:** How do TNCs affect air quality emissions?
- ▶ **TNC Policies:** What is the role of government in regulating TNCs?
- ▶ **TNC Best Practices:** What potential impacts of TNCs have other agencies identified, and what policies have they enacted in response?

Questions?

Drew Cooper
drew.cooper@sfcta.org



SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY