



# Planning the Post-Car City

## Research Methods, Findings, and Implications

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University of California, Berkeley

**Berkeley**  
UNIVERSITY OF CALIFORNIA

# Overview

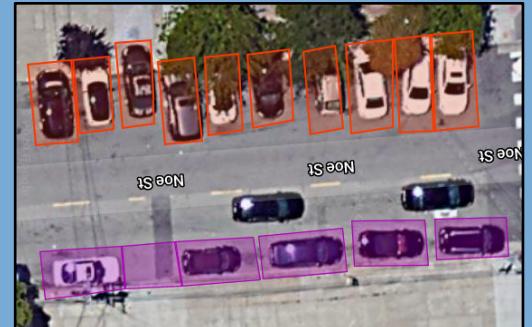
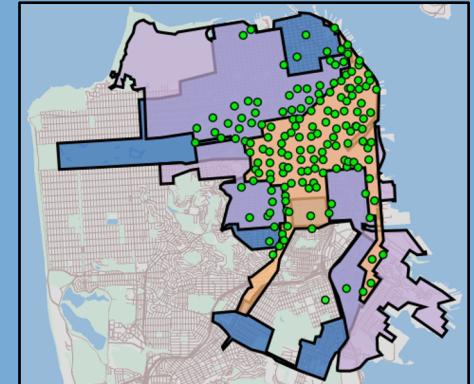
1. What's the problem with cars?



2. Micromobility

3. Bike Lanes

4. On-Street Parking





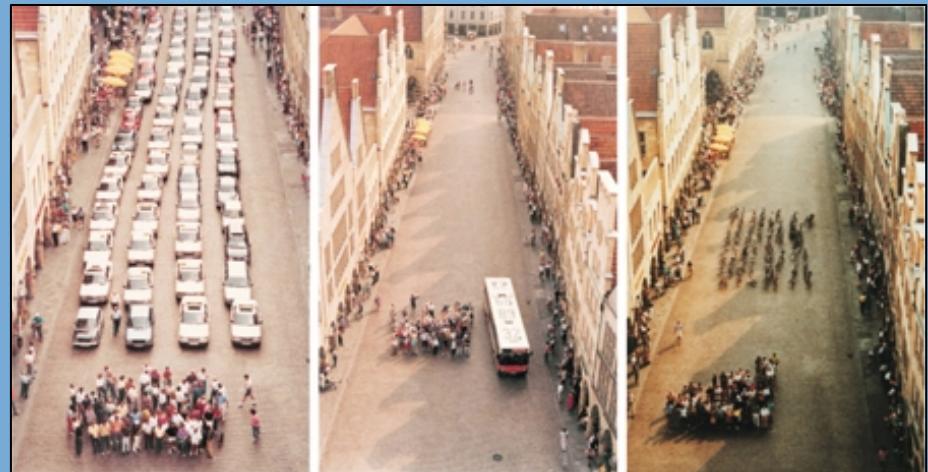




# What's *wrong* with Cars?



# Inefficient



# Dangerous

Fatalities and Fatality Rate per 100 Million VMT, by Year, 1975-2018



Sources: FARS 1975-2017 Final File, 2018 ARF; 1975-2017 VMT – Federal Highway Administration's (FHWA) Annual Highway Statistics; 2018 VMT – FHWA's June 2019 TVT

NHTSA

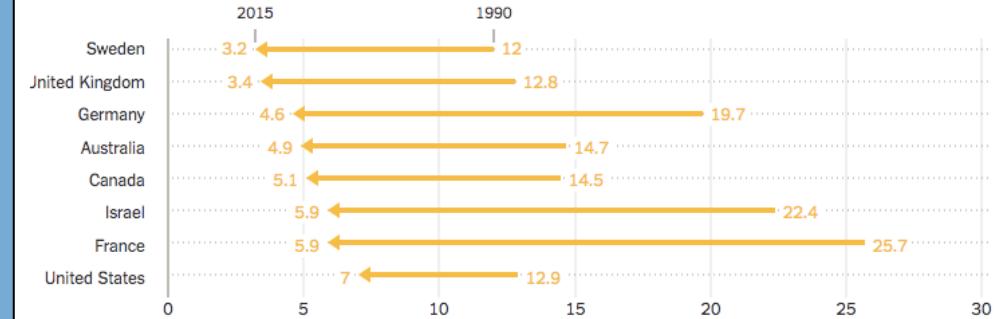
New York Times, 2017

**140 countries pledged to eliminate traffic deaths. The U.S. did not.**

*It's the safe streets equivalent of withdrawing from the Paris climate agreement*

By Alissa Walker | @awalkerinLA | Feb 25, 2020, 10:00am EST

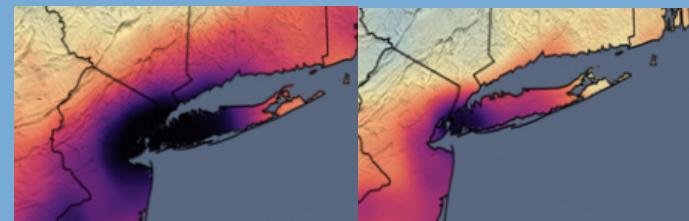
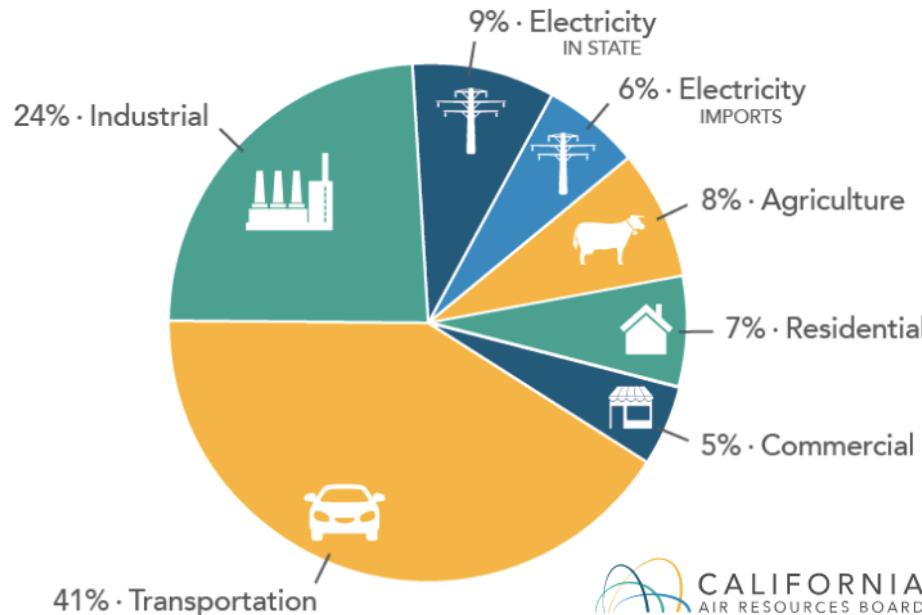
Deaths per billion vehicle miles traveled



Marcel Moran, UC Berkeley

# Environmentally Destructive

2017 GHG Emissions by Main Economic Sector



NASA, 2020

LOCAL // ENVIRONMENT

Huge amounts of plastic, much of it from car tires, washing into SF Bay, study finds



Kurtis Alexander

| Oct. 2, 2019 | Updated: Oct. 2, 2019 5:05 p.m.

Marcel Moran, UC Berkeley

# Alternatives

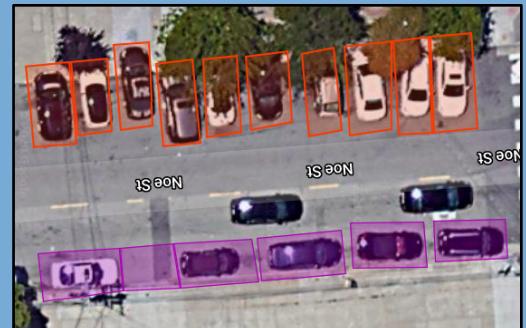
## 1. Micromobility



## 2. Bike Lanes

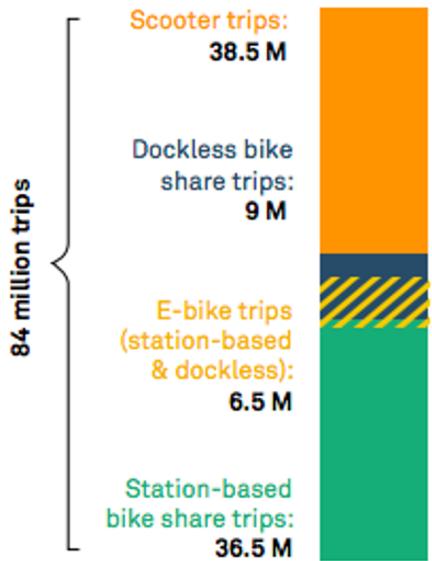


## 3. Use of Public Right of Way

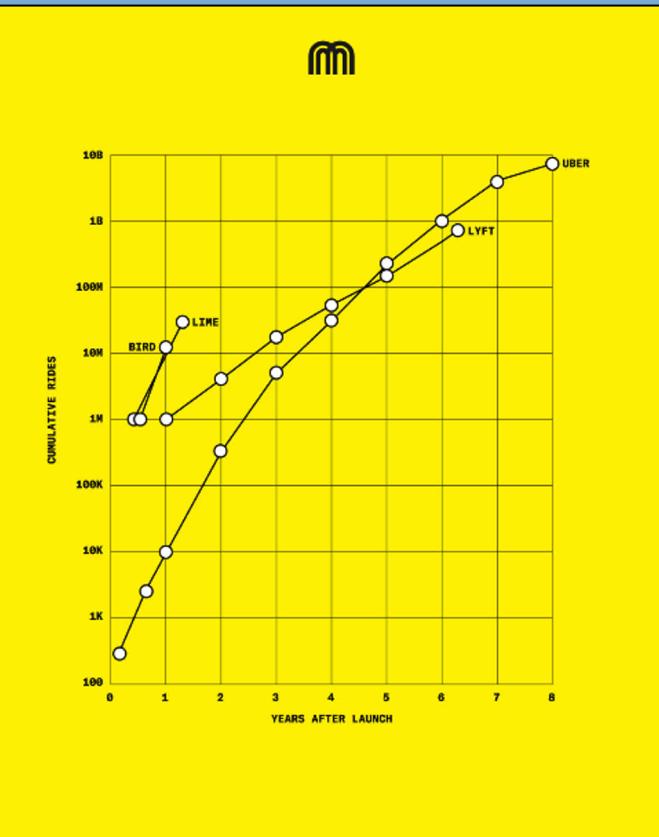


# Micromobility

## Breakdown of 2018 Trips



Source: NACTO



Source: *Micromobility.io*

**E-scooters attracted new people to active transportation.**  
74 percent of local users reported never riding BIKETOWN and  
42 percent never bicycling.



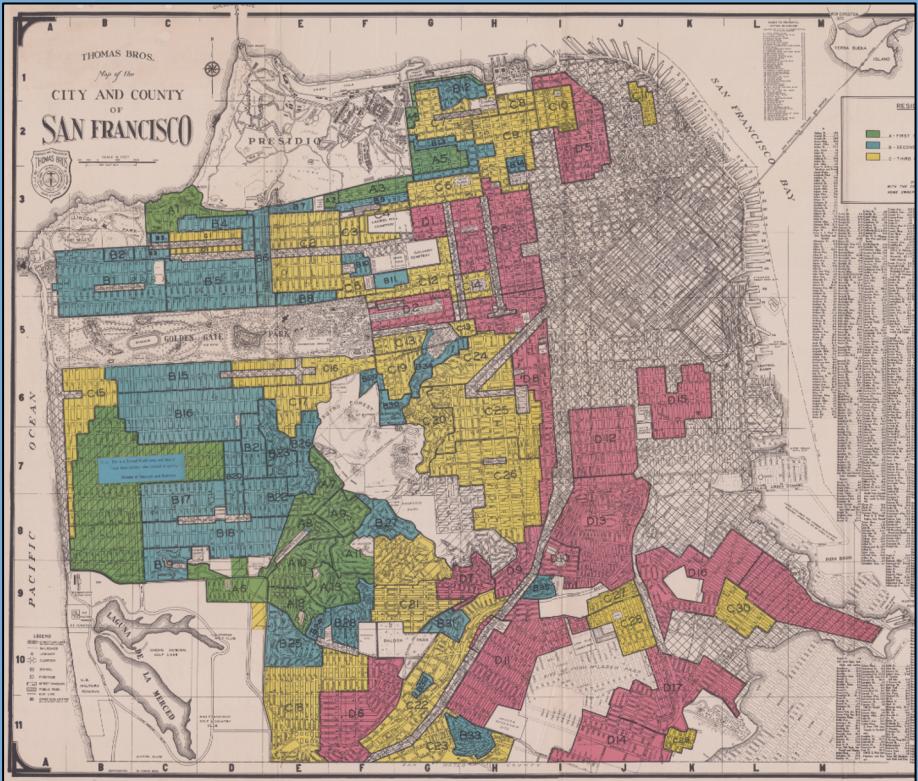
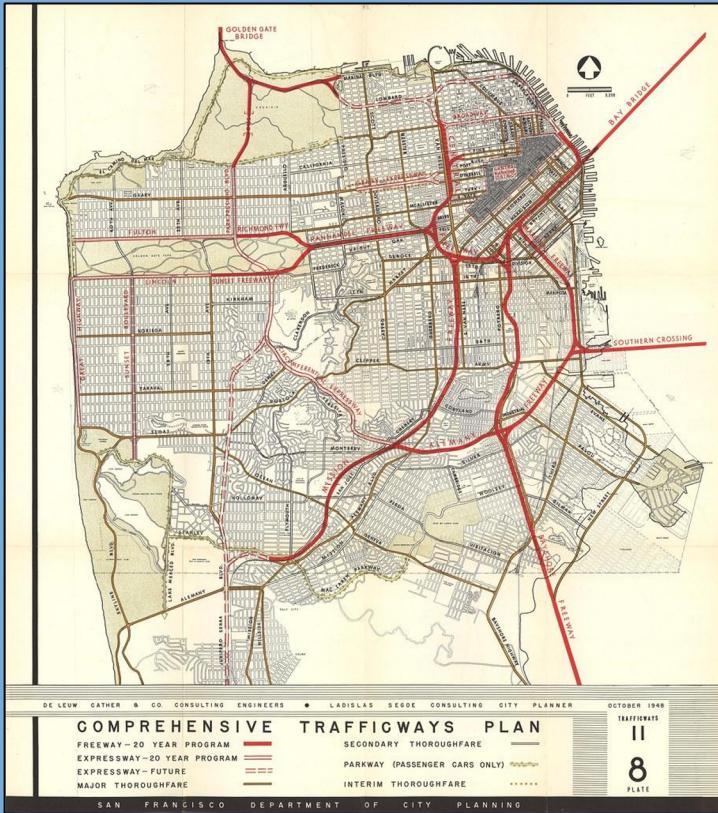
Marcel Moran, UC Berkeley

# Research Question

*For micromobility to replace car trips, how must it be distributed and/or regulated spatially?*



# Longstanding Question in Field



# Literature Review



Seestadt, Vienna, Austria



Portland, OR



Budapest, Hungary

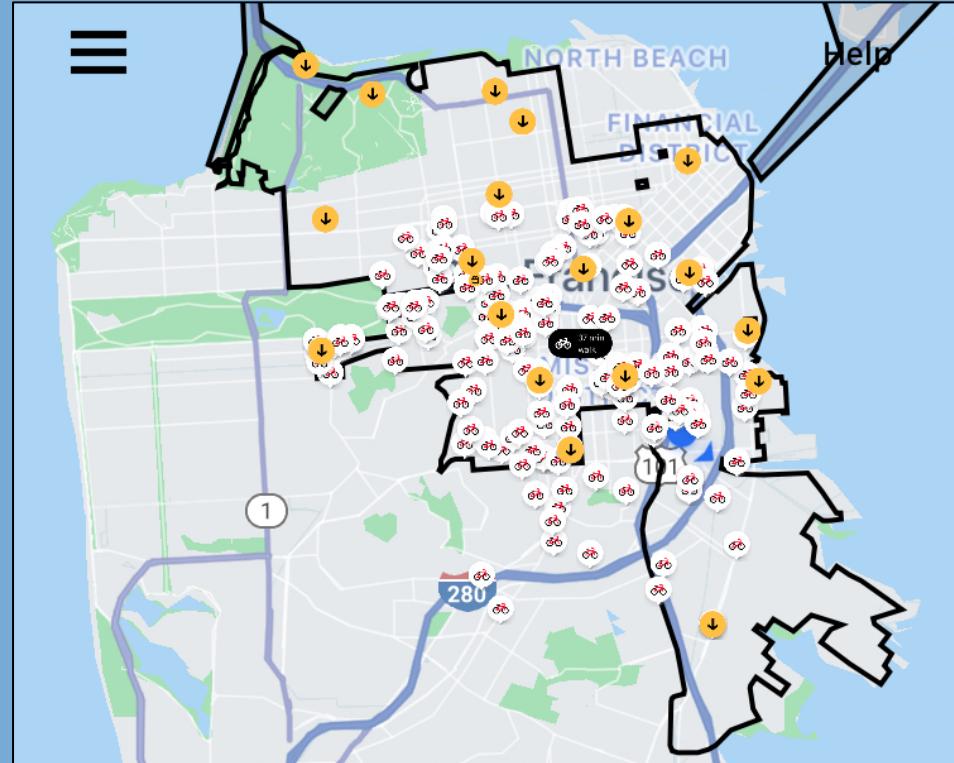
Emphasis has been on **station** location,  
**rebalancing**, and access.

# Mobility Geofences

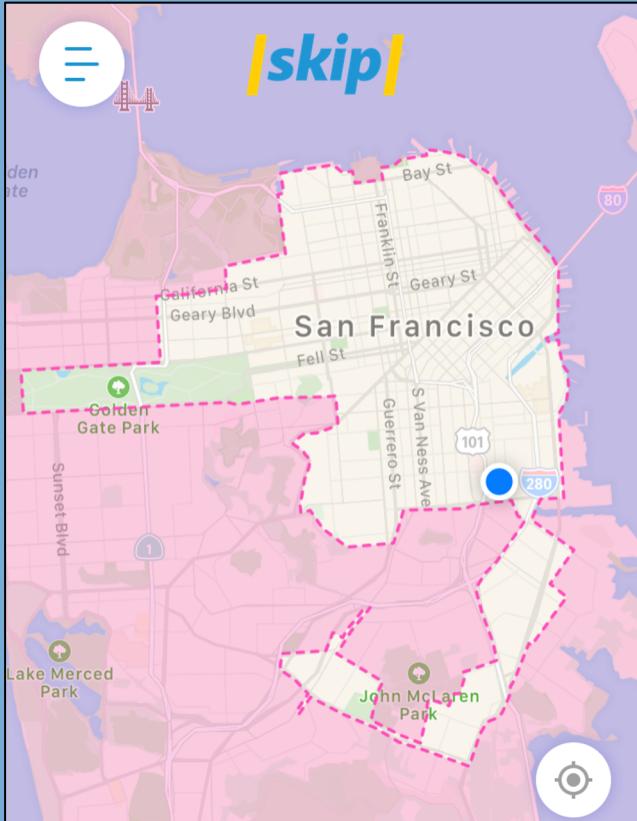
*Virtual geographic boundaries which dictate where bike/scooter trips may begin & end.*

Communicated via mobile applications.

Enforced via penalty fees, speed decrease, or bans from the platform.



# Why Do Geofences Matter?

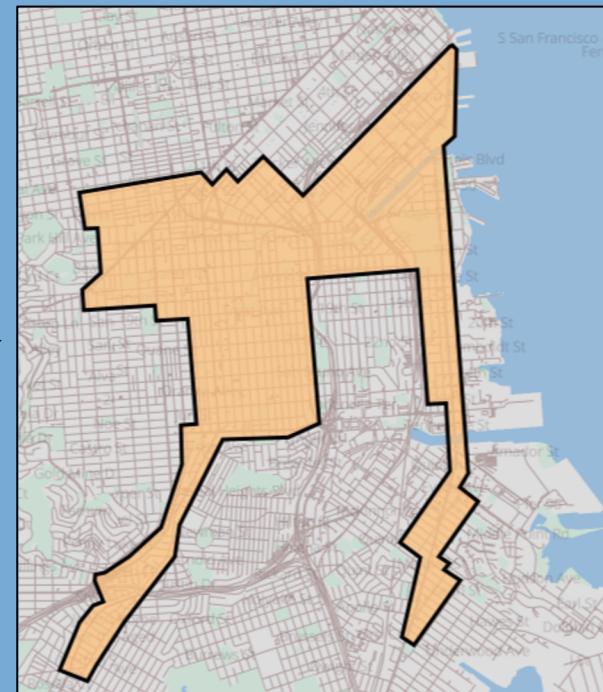
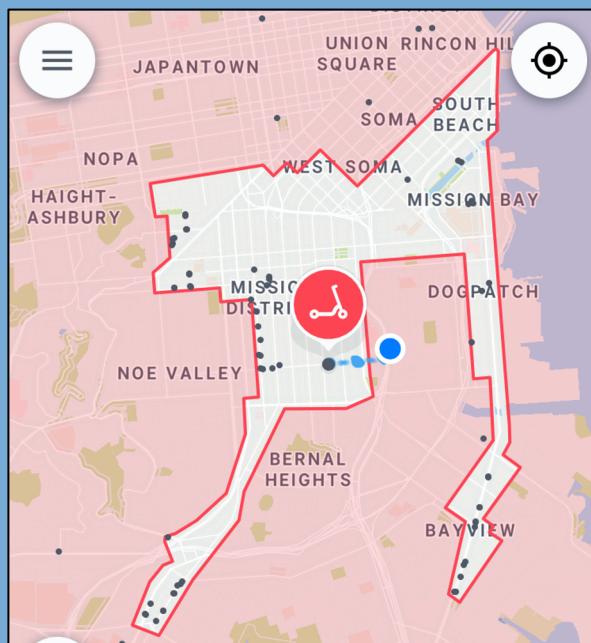


Equity and Access\*

Regulatory Touch Point

Transit Complementarity

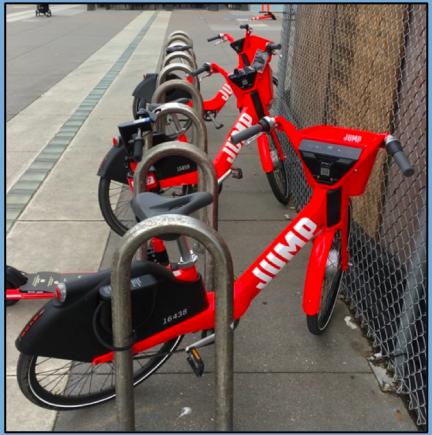
## Methods



# Timeline

Bay Area  
Bike Share

2013



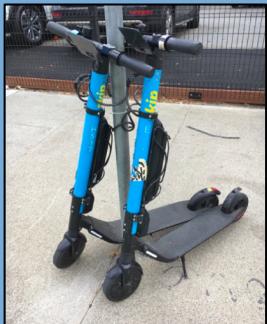
2017

JUMP  
Bikes



Scooter  
Pilot

2018



Scooter  
Permits

2019

# Methods



≡

San Francisco Chronicle

LOCAL WILDFIRES PG&E SHUT-OFFS SPORTING GREEN POLITICS BIZ+TECH FOOD CULTURE DESK DATEBOOK US & WORLD

BIZ & TECH // BUSINESS

## The 12 scooter companies that plan to roll through San Francisco

By San Francisco Chronicle | June 15, 2018 | Updated: June 15, 2018 10:26 p.m.

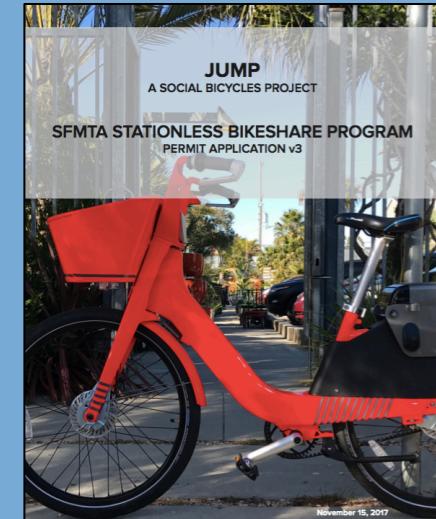
**SFMTA**  
Municipal Transportation Agency

### STATIONLESS BIKE SHARE PROGRAM PERMIT APPLICATION

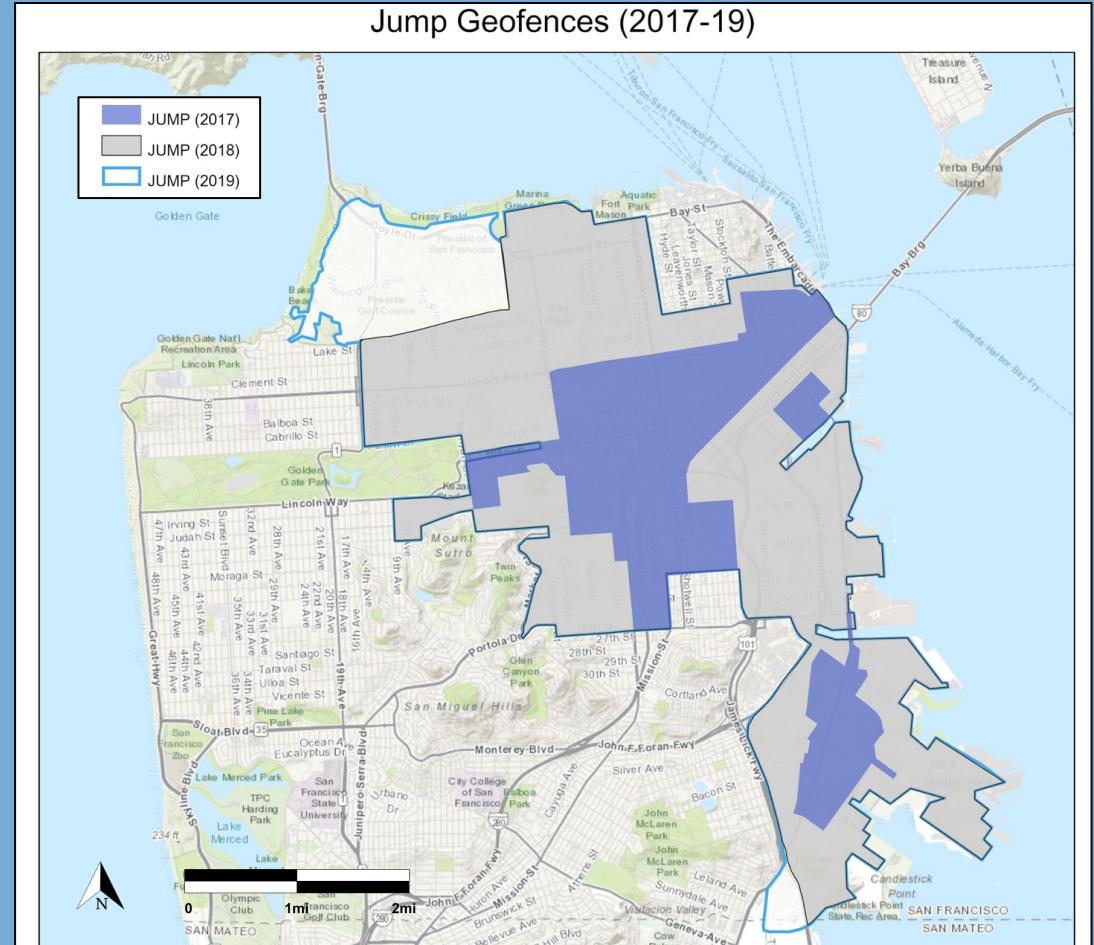
Application Type  
(check one):  New  Renewal

**Applicant Information**

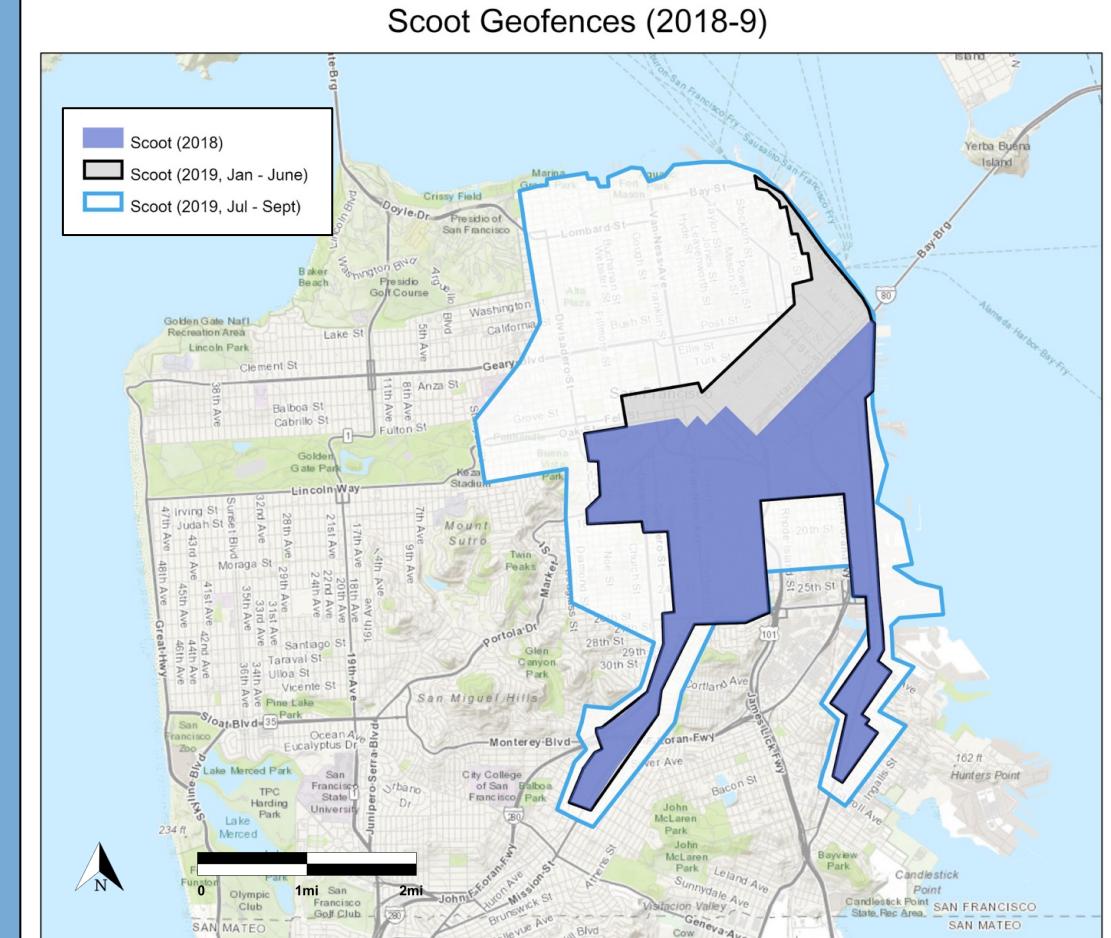
Name of Stationless Bicycle Share Operator Applicant		
Contact Name		
Mailing Address		
Phone Number 1		Phone Number 2
Email Address		
Website		



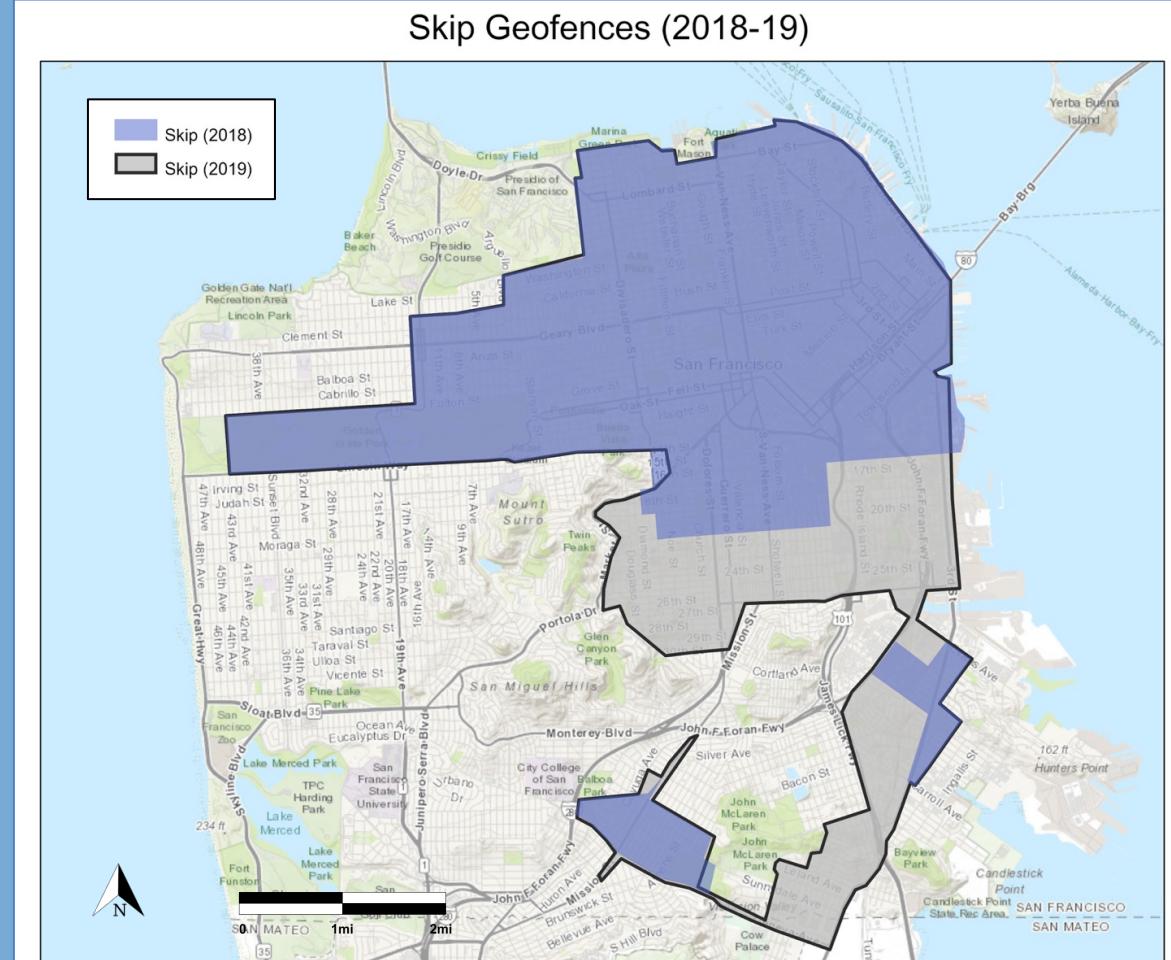
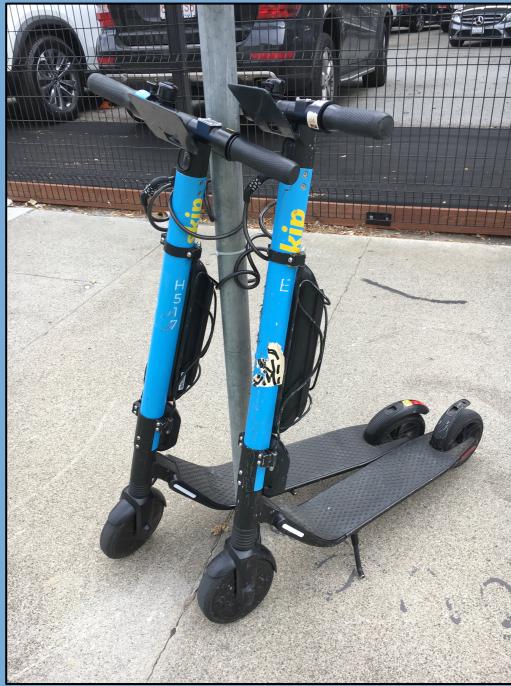
# Results



# Results

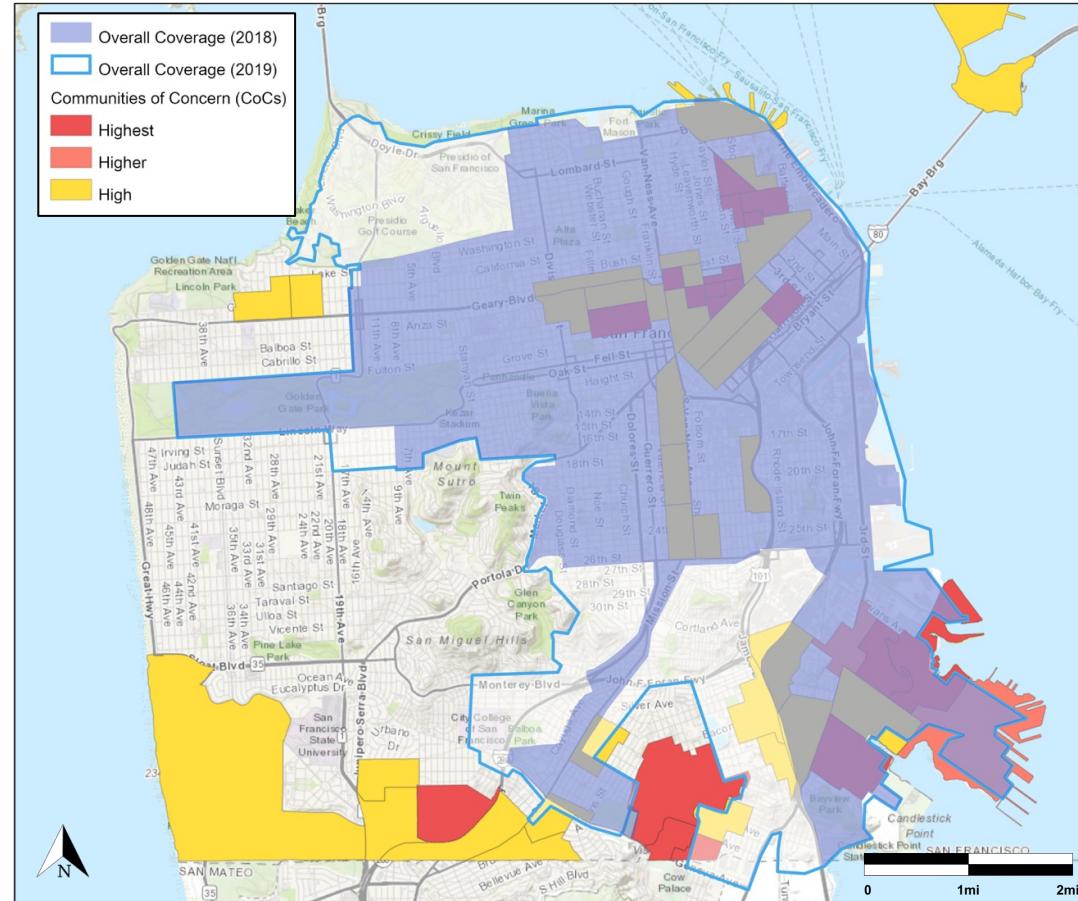


# Results



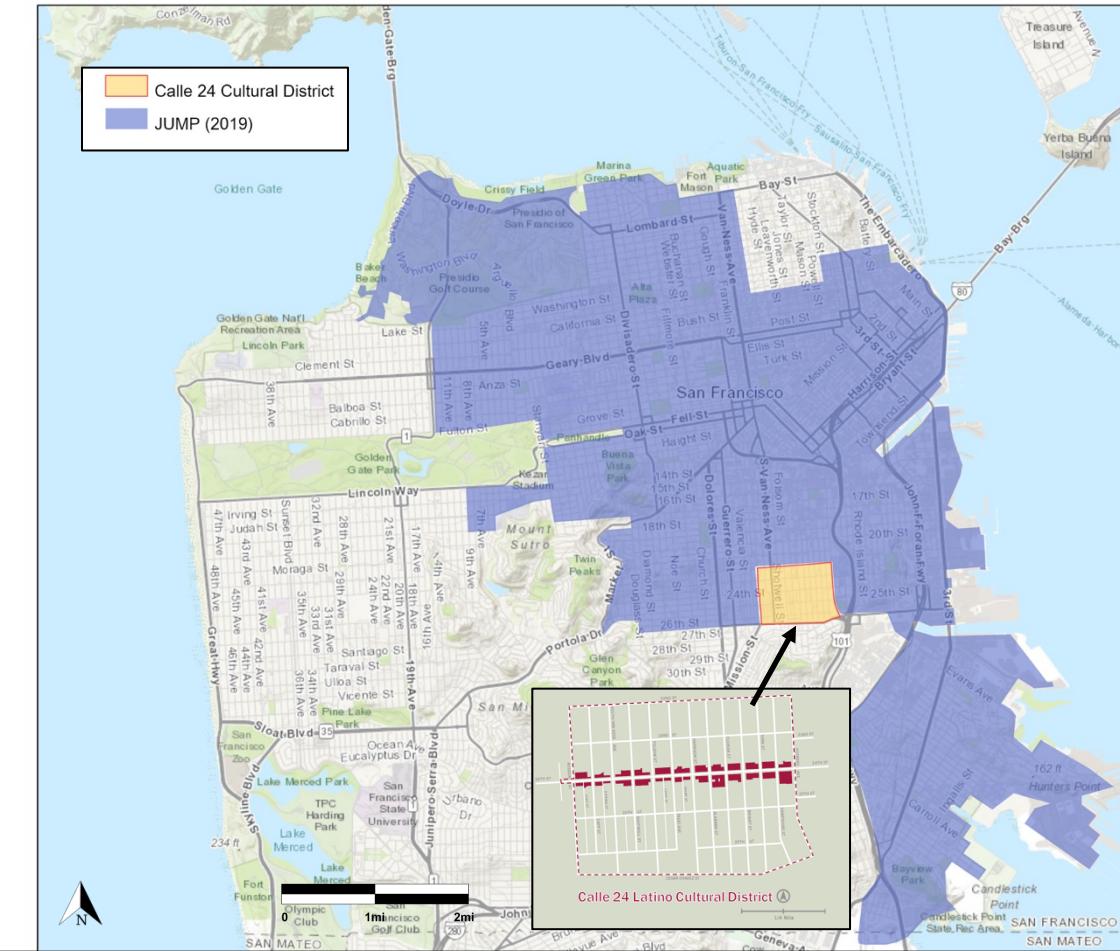
# Results

Overall Geofence Coverage (2018-19)

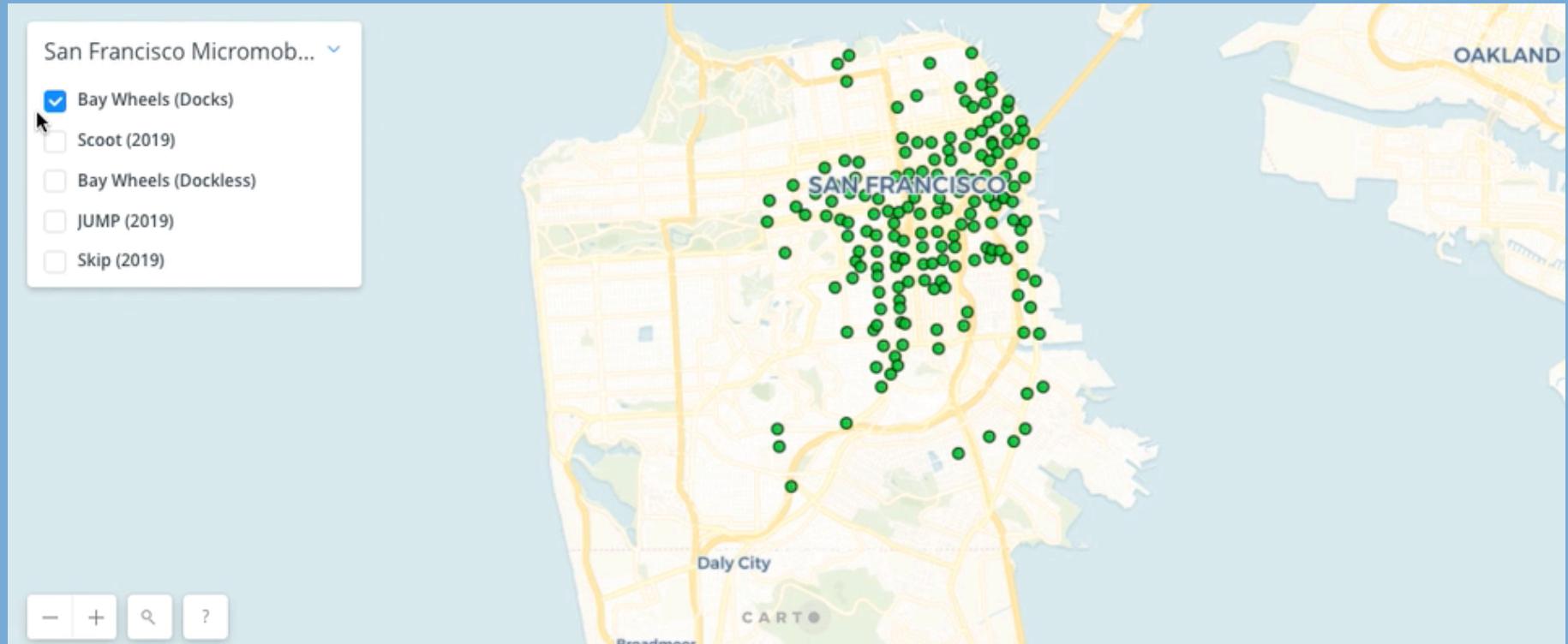


# Results

## Calle 24 Cultural District and JUMP Bikeshare

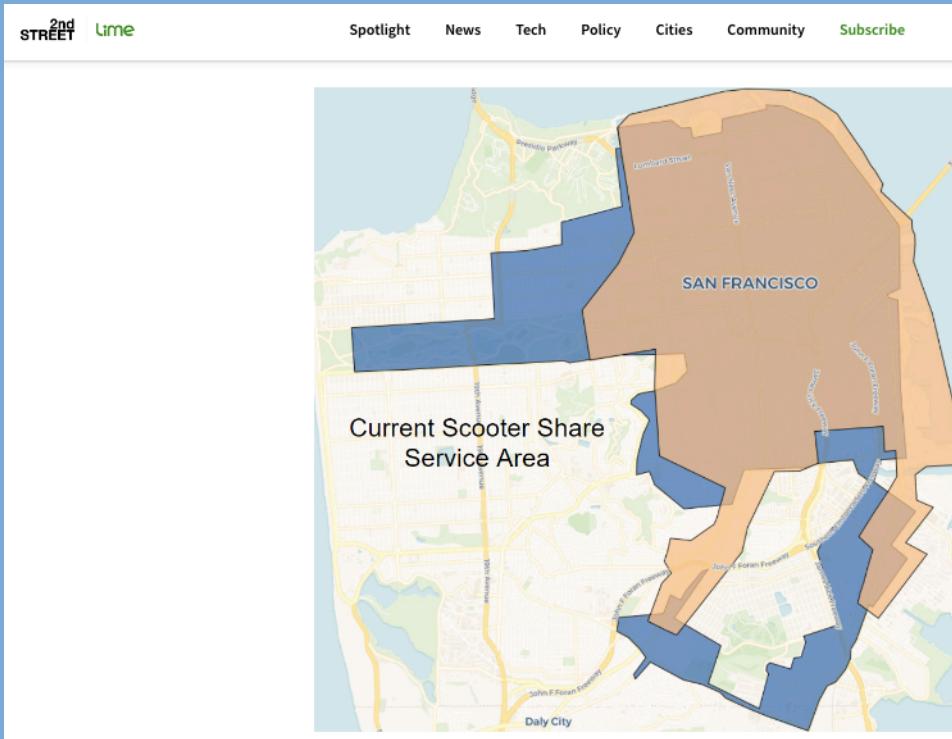


# Online Tool



## Trip Data In Oakland Give Important New Insights Into Scooter Demand In San Francisco

Policy | September 12, 2019 | Share [f](#) [t](#) [in](#)



Hi @Marcel E. Moran, long time no seen ! :)

I remember, in our ☕ you were showing me all the maps you have. Well, I would need our map old map if you don't mind. For some reason I cannot find (think it got deleted from mine mymaps somehow).

Do you mind sending me ?



Cheers!

# Takeaways

1. New mobility services raise the need for **spatially-specific** regulations, that are coordinated across modes.
2. Geofence issues (coverage, service duplication) should be raised **during the permit process**, as well as when changes to geofences are requested.
3. There are opportunities to create **geofence-based incentives**, or follow a NYC Approach of municipally-divided coverage zones.
4. **Story Mapping** – What are other ways you would visualize this information and data?



 Case Studies on Transport Policy  
Volume 8, Issue 2, June 2020, Pages 658-671

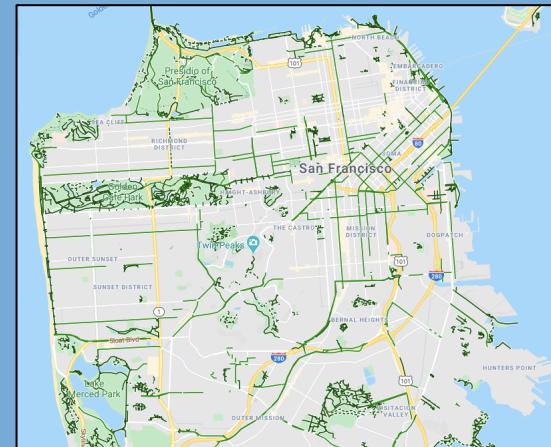


Six scooter operators, six maps: Spatial coverage and regulation of micromobility in Vienna, Austria

Marcel E. Moran <sup>a</sup> , Barbara Laa <sup>b</sup>, Guenter Emberger <sup>b</sup>

# Research Question

*How effective are bike lanes at providing safe transport? How can we understand their disruption by cars?*



# Context



LOCAL // BAY AREA & STATE

Breed calls for 20 miles of new protected bike lanes in SF in two years

LOCAL // BAY AREA & STATE

Traffic fatalities soaring despite effort to make city streets safer



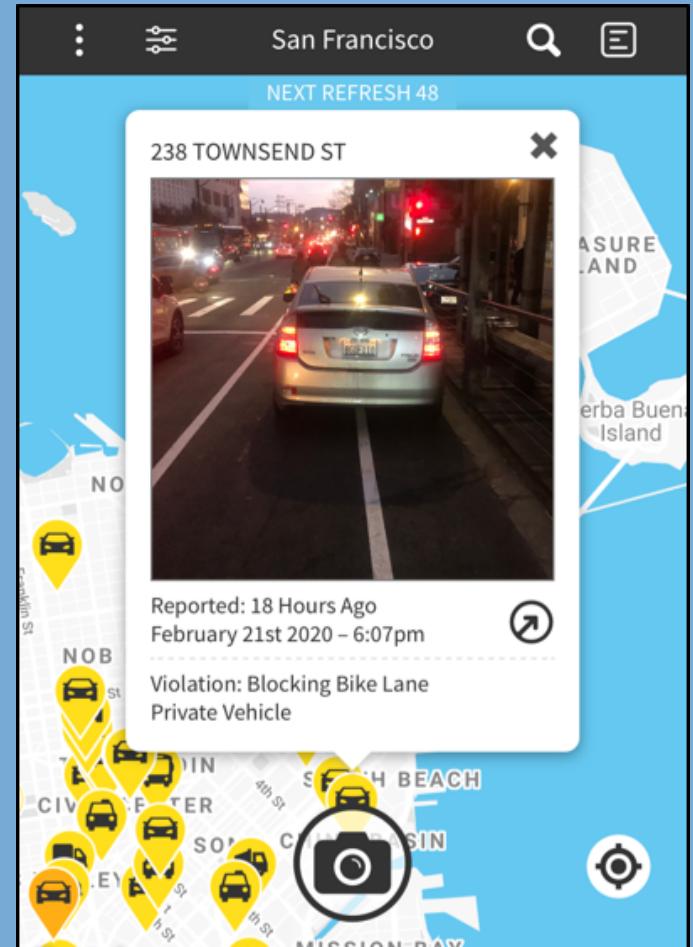
Rachel Swan

| May 20, 2019

| Updated: May 20, 2019 11:41 a.m.

ZERO TRAFFIC DEATHS  
IN SAN FRANCISCO

# Safe Lanes

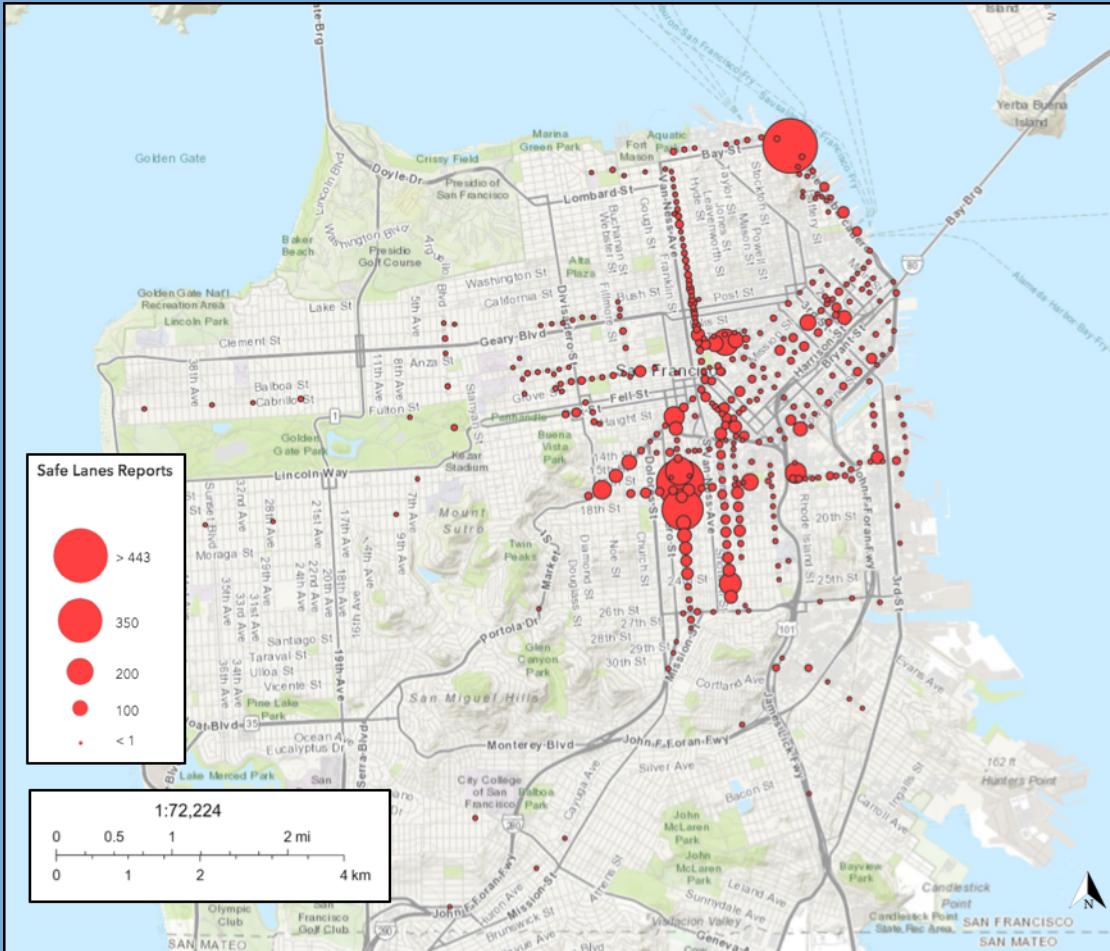


# Bike Lane Enforcement

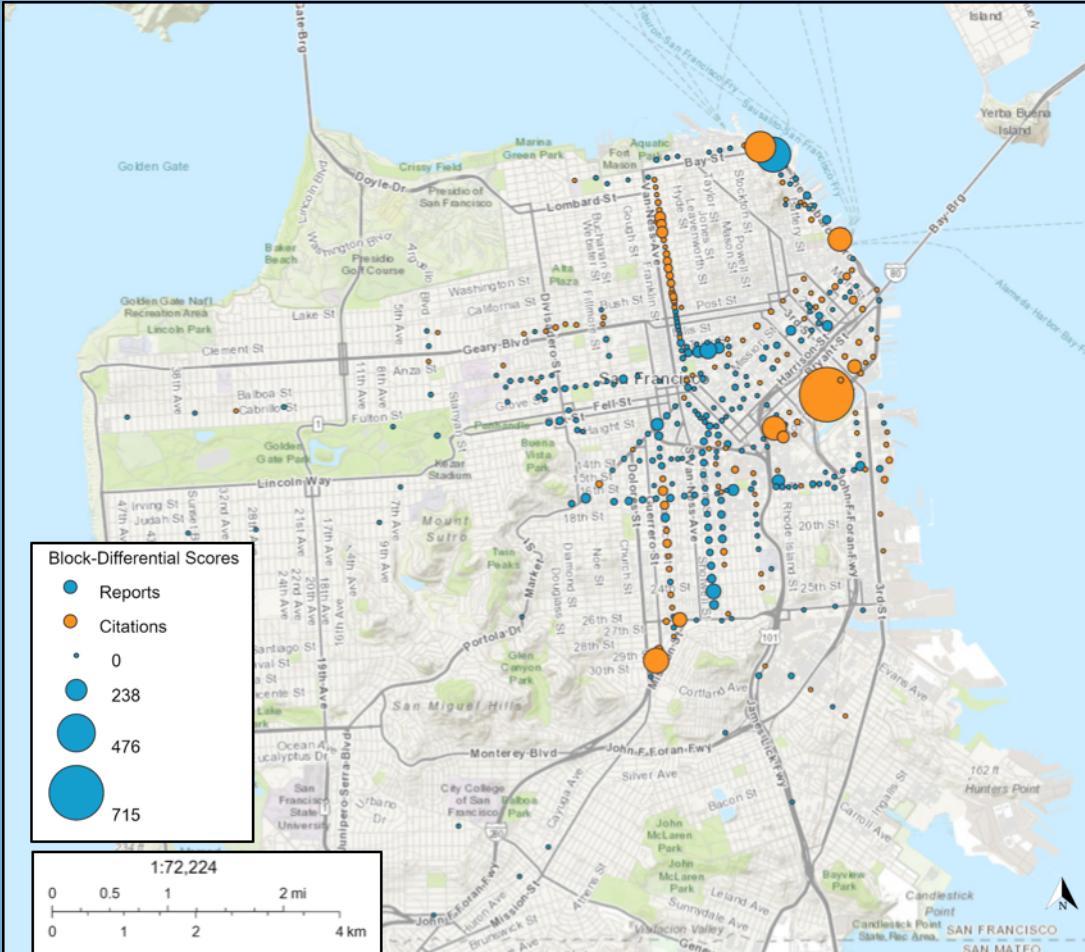


DataSF

# Results



# Results



# Results

**Table 2:** Safe Lane Reports of Blocked Bike Lanes by Vehicle Category (May 1, 2019 to January 31, 2020)\*

Vehicle Category	Reports	Percentage
Private Vehicle	1,808	31%
Delivery Vehicle	1,593	28%
Ridehail / Taxi	1,323	23%
Commercial Truck	601	10%
Public (Police/Fire/Utility)	203	4%
Private Bus / Shuttle	124	2%
Other Obstruction / Dumpster	117	2%

\* 3,708 of the 9,477 total reports lack vehicle-category classification.

# Results

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# Takeaways

1. Mapping Safe Lanes data highlights where **blockage hot spots** are, which should be prioritized for protected infrastructure.
2. Block-differential scores indicate where **SFMTA enforcement** falls below incidence of blockages.
3. Vehicle categorization indicates **passenger and goods delivery** are majority of perpetrators, providing support for converting many long-term parking spots to loading zones.
4. **Story Mapping** – What are other ways you would visualize this information and data?



# On-Street Parking



**Census: SF Has Enough Street Parking Spaces To Fill CA's Coastline**

By Aaron Bialick | May 22, 2014 | 40 COMMENTS

THIS POST IS SUPPORTED BY GJEL ACCIDENT ATTORNEYS

**SFMTA Completes Citywide Census of On-Street Parking Spaces**

# Angled Parking



# Angled Parking

1. AP increases the number of cars that can park along any given curb, further encouraging their use.
2. AP reduces the space that can otherwise be used for bike lanes, widened sidewalks, parklets, bikeshare stations, etc.
3. Especially when perpendicular, AP worsens the visibility of pedestrians at intersections/
4. AP does **not** calm traffic or reduce collisions, as many of its supporters profess.



# Research Question

*How much angled parking does San Francisco maintain, where does it occur, and how does it relate to the bike-lane network?*

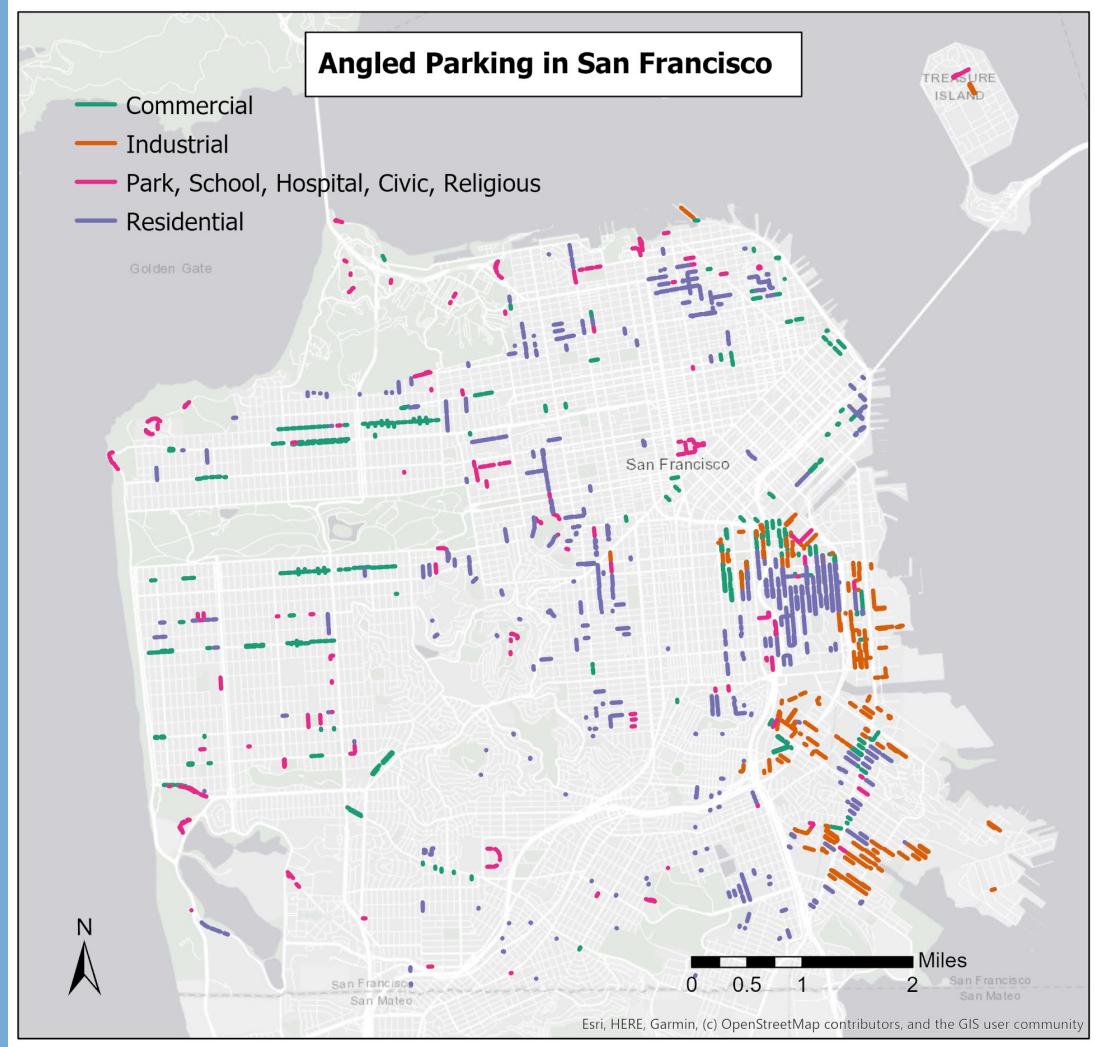


# Angled Parking



# Angled Parking

50 Miles



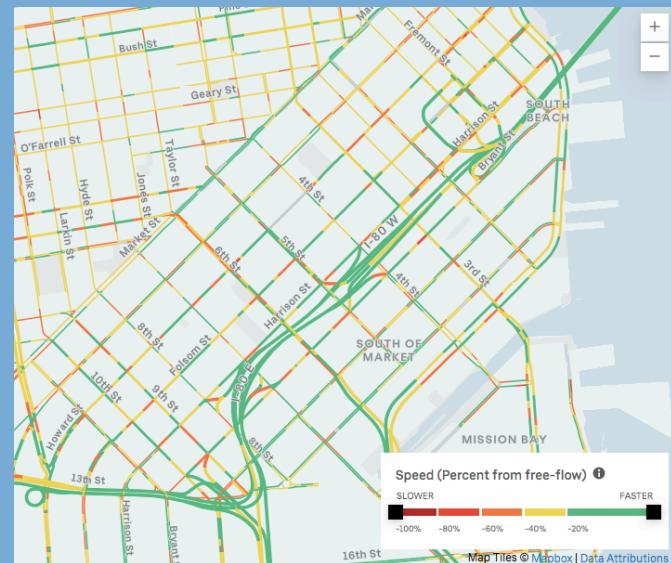
# Angled Parking



4 miles occur directly adjacent to sharrows or painted lanes



# Angled Parking



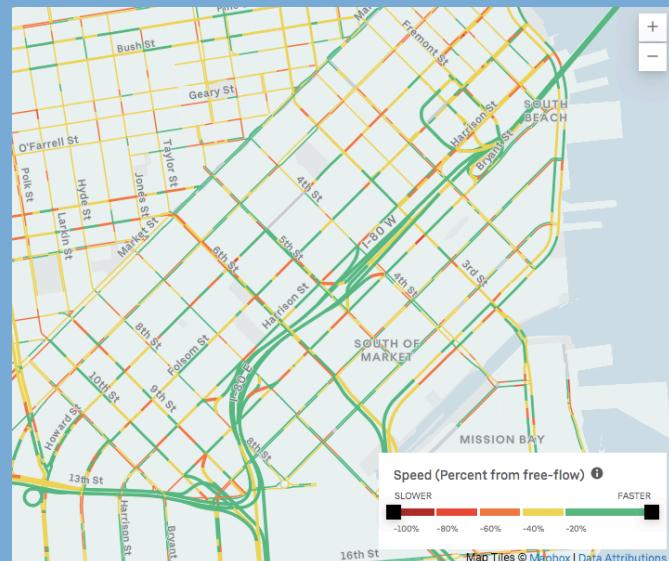
Uber Movement

# Angled Parking



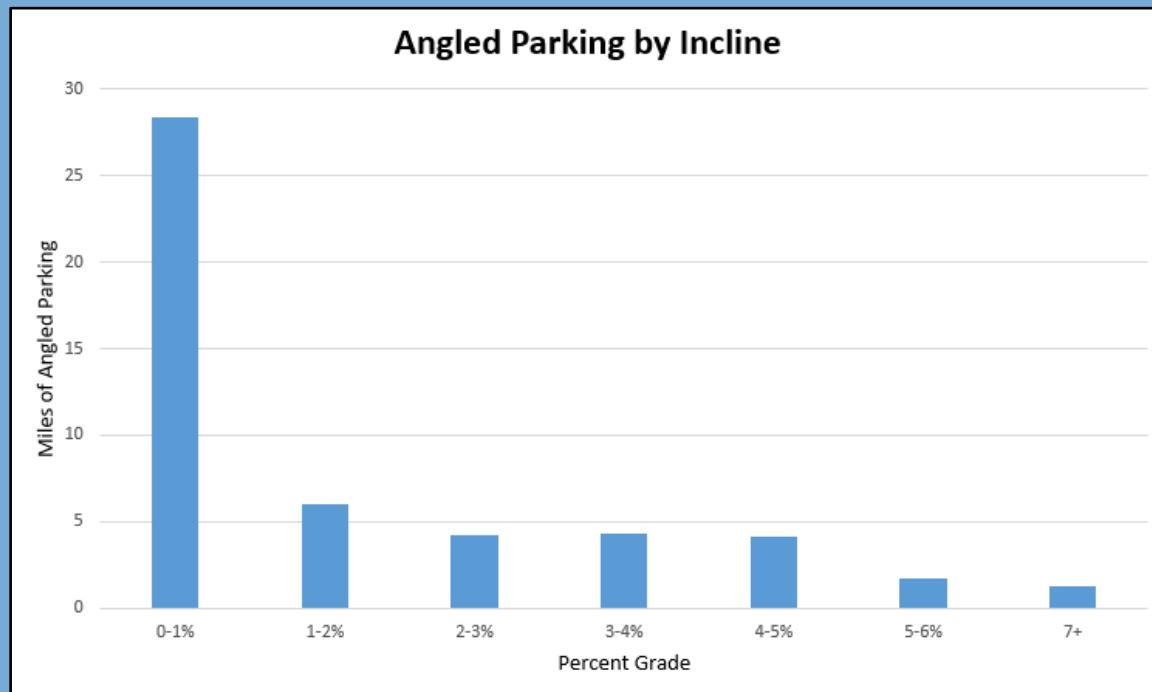
**14.78 MPH**

**15.06 MPH**



## Uber Movement

# But What about the Hills?



# Takeaways

1. Angled parking occurs **sporadically** throughout San Francisco, and **undermines** its active-transportation, pedestrian-safety, transit, and air-quality goals.
2. The 4 miles that occur **directly adjacent** to San Francisco's bike-lane network should be prioritized for conversion, as should that which sits on both curbs of a single street.
3. Angled parking's ability to calm traffic is challenged by Uber Movement data, which should also be tested in other cities.
4. **Story Mapping** – What are other ways you would visualize this information and data?



# Final Thoughts

1. Planning the Post-Car City is the work of transport planners for this decade and those to come, and must be **multi-faceted**, and not be limited to just infrastructure or micromobility.
2. You do not need **large budgets** to conduct effective research. The three projects reviewed here had a total budget of \$0.
3. Be an **inductive** researcher. Consider your own experience in living in and traveling through cities as critical data gathering.



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Thank You!

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