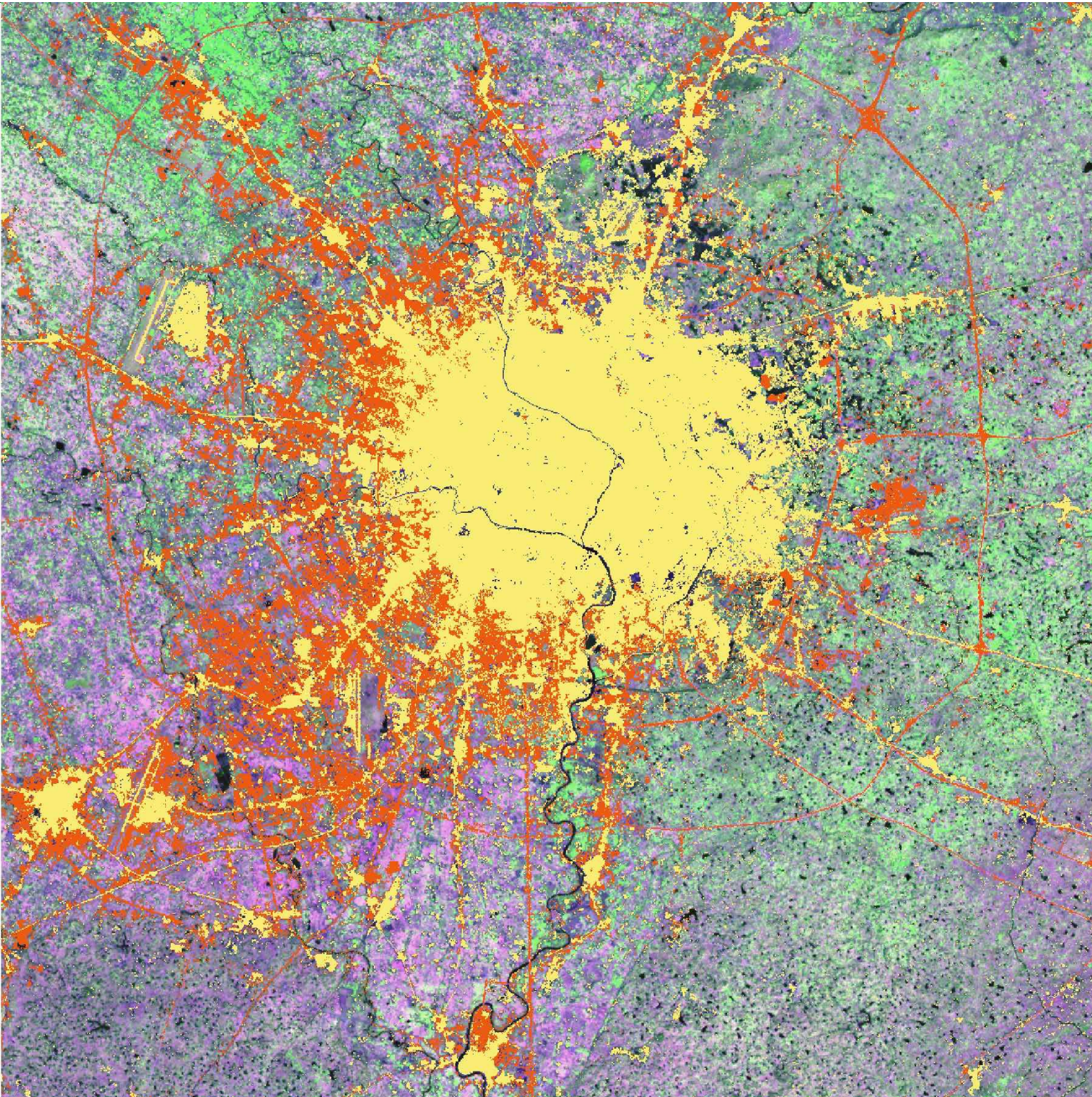


Can data save the city ?

Chengdu

Pop ~7m

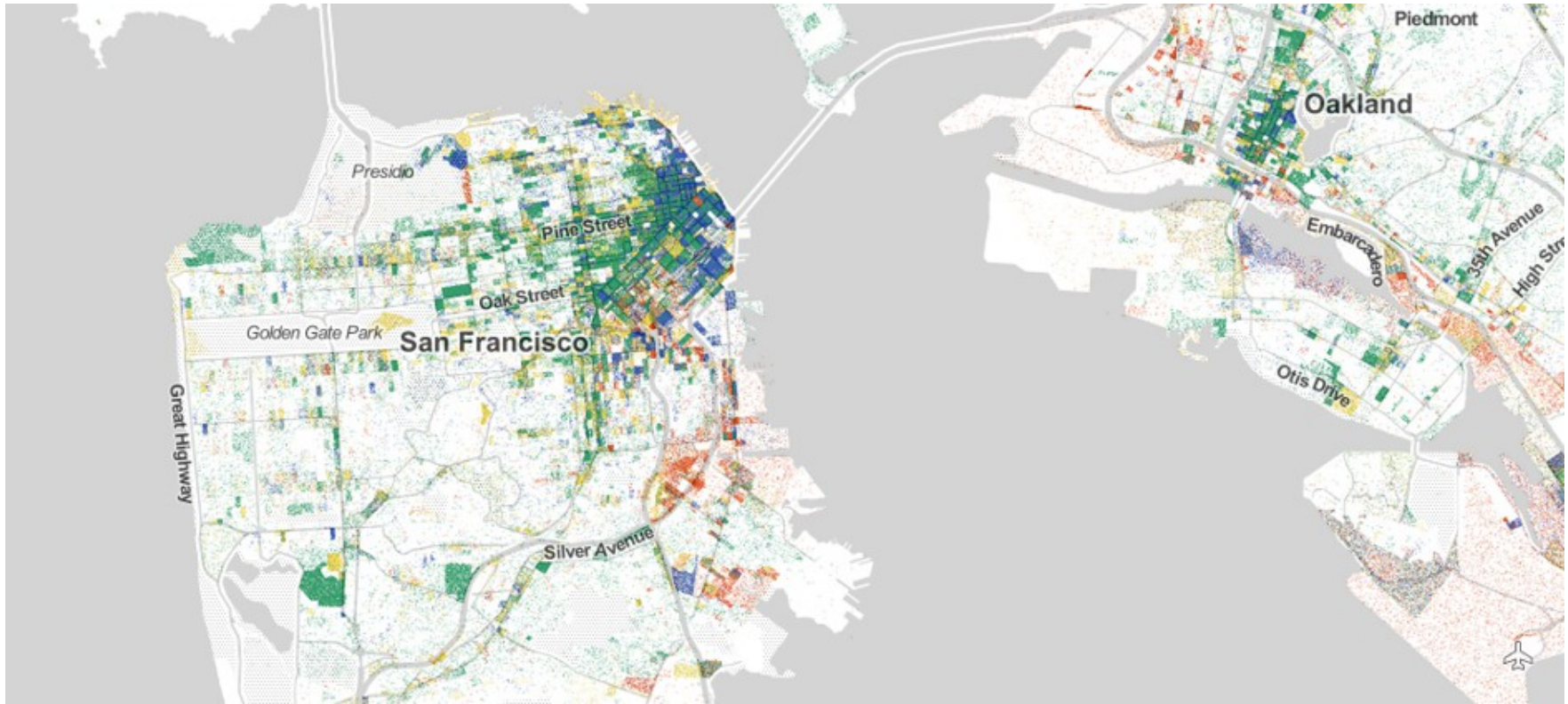


1990  
2000

NASA  
Earth  
Observatory

# San Francisco

CityLab: where the jobs are...



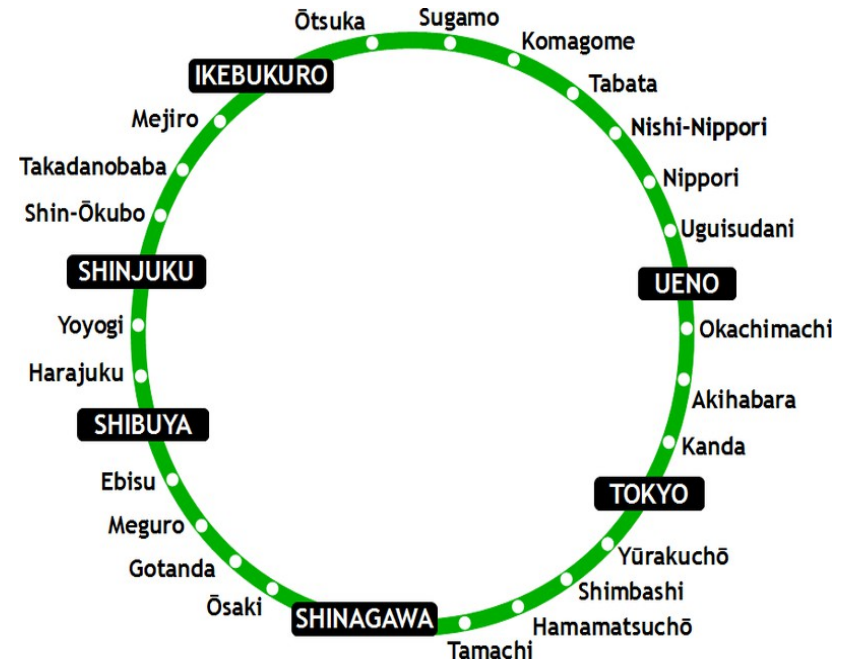
“Red dots represent manufacturing and trade.  
Blue dots are professional services.  
Green represents healthcare, education, and government.  
Yellow is retail, hospitality, and other services.”

Squeezing in the queue to your job....



Golden Gate Bridge (one lane)  
[src Google Maps]

1.5 passengers/sec



Yamanote Line (central Tokyo)  
[src timetable, often higher: they overload trains]

20 passengers/sec



Google: self-driving car

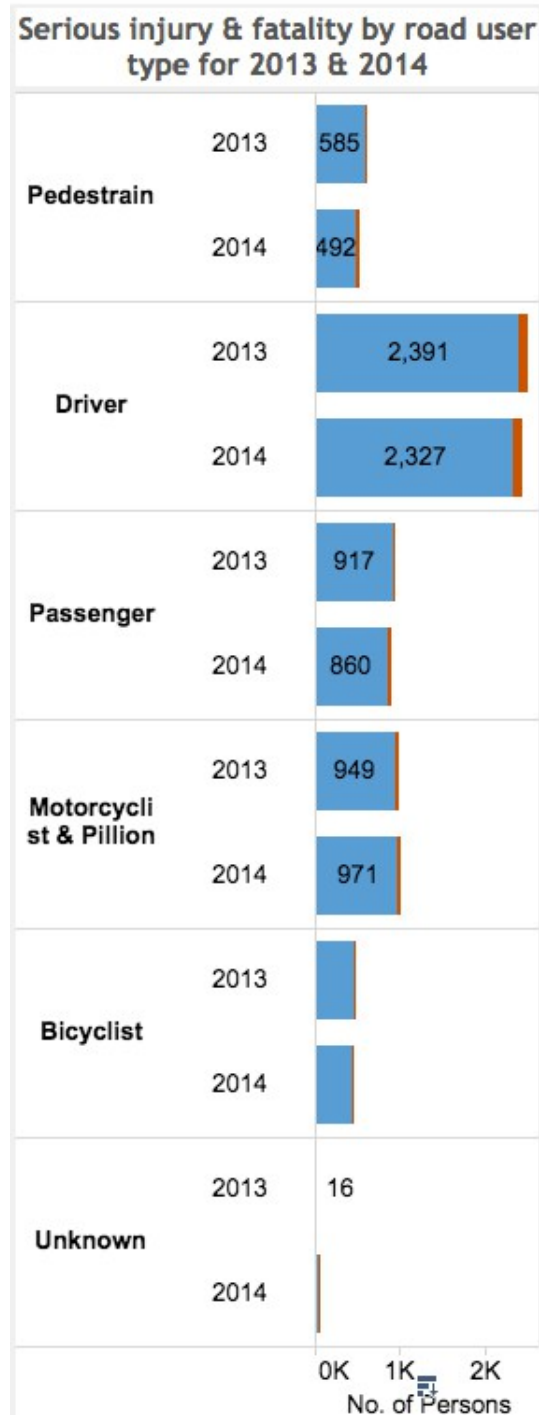
Why self-driving cars ? (1)



## Why self-driving cars ? (2)



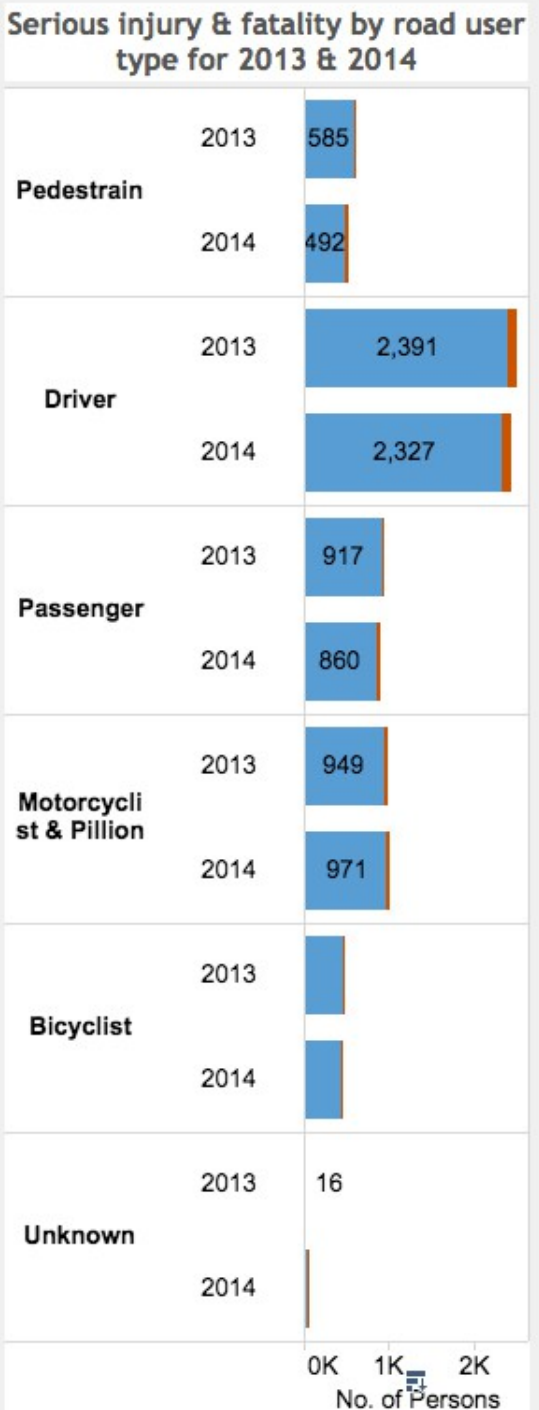
# Why self-driving cars ? (3)



Vicroads: crash stats



# Why self-driving cars ? (3)



Road User Type	Year	No. of Persons
Pedestrian	2023	0
	2024	0
Passenger	2023	0
	2024	0

Vicroads: crash stats

Why no human drivers ?



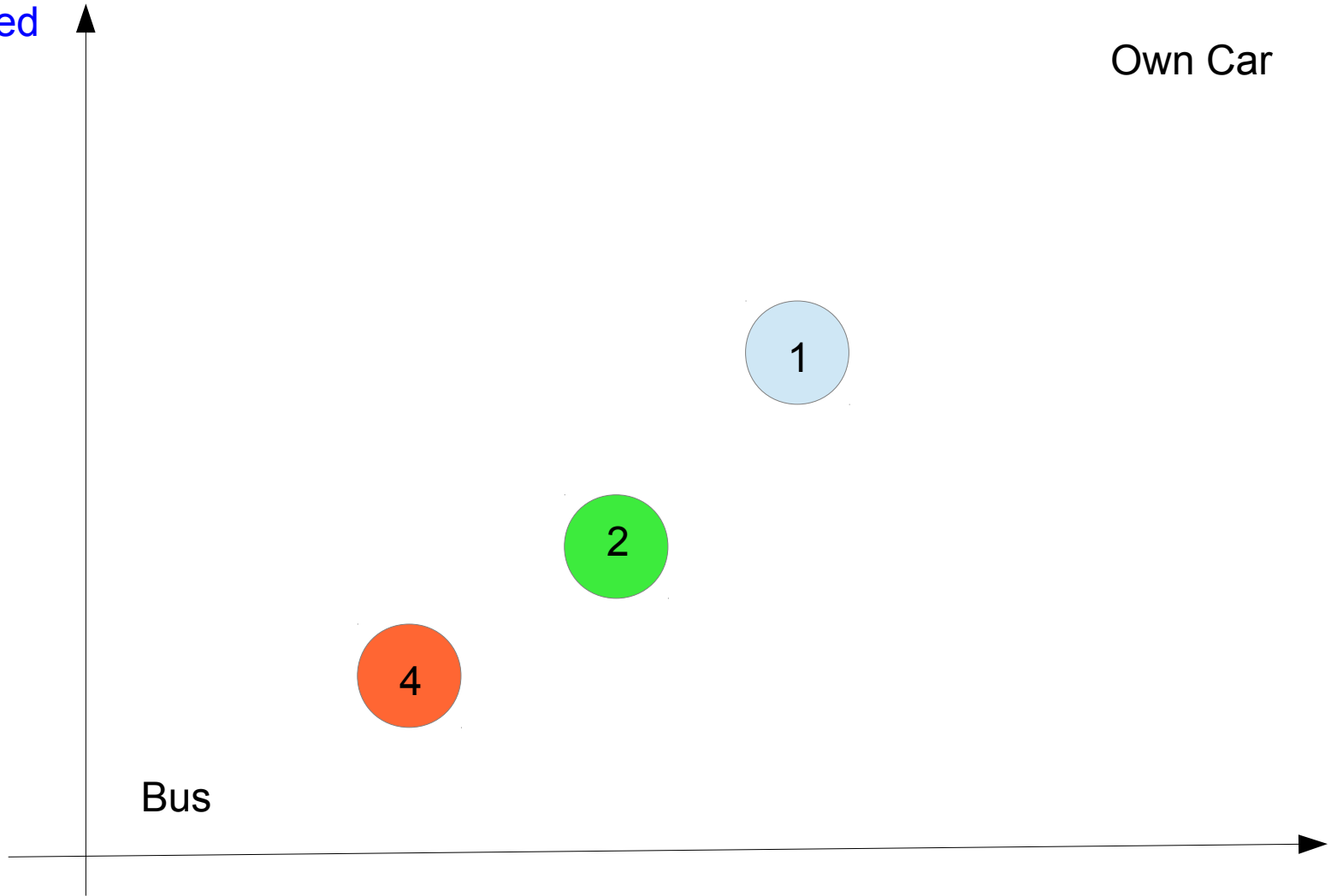
## Eternal sunshine of the cheap autonomous car...

- live in a remote location and spend all day travelling and working in our car
- go in to work, send the car home and get it to return to pick me up in the evening
- sell the car, and never own one again: only using one when I need one.

Utility Economics

How can mass transit and autonomous cars work together ?

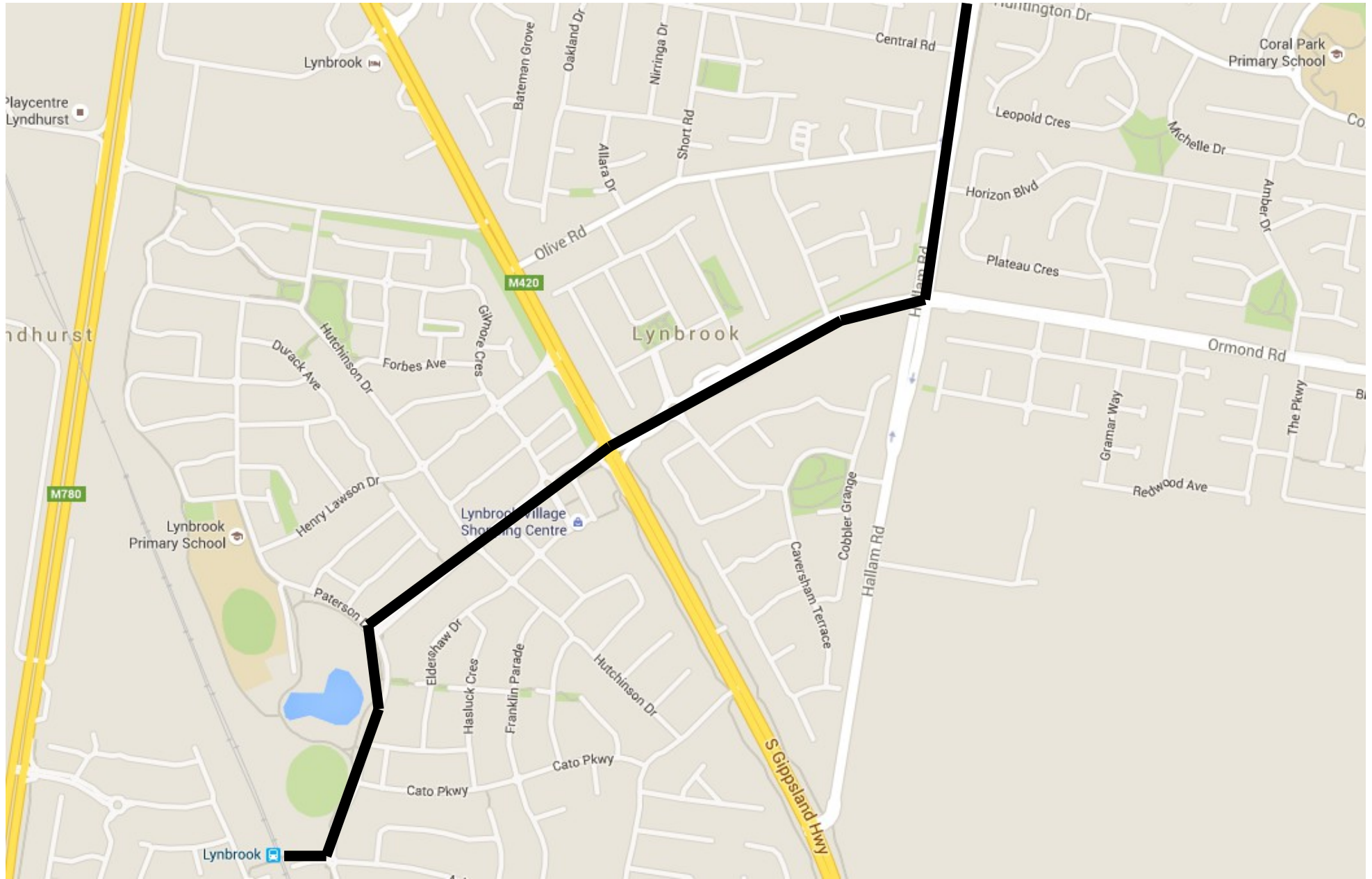
Speed



Own Car

Bus

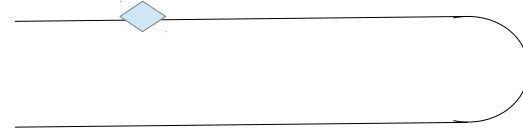
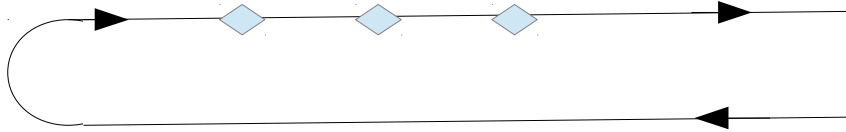
Cost



Feeder suburb for Lynbrook, on Pakenham line: about 5km from station.

Station

Stops



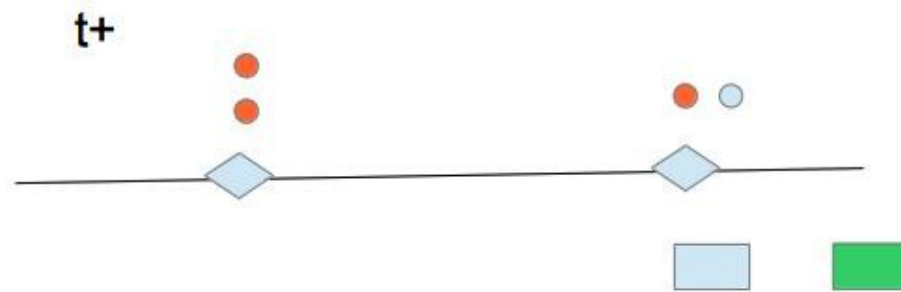
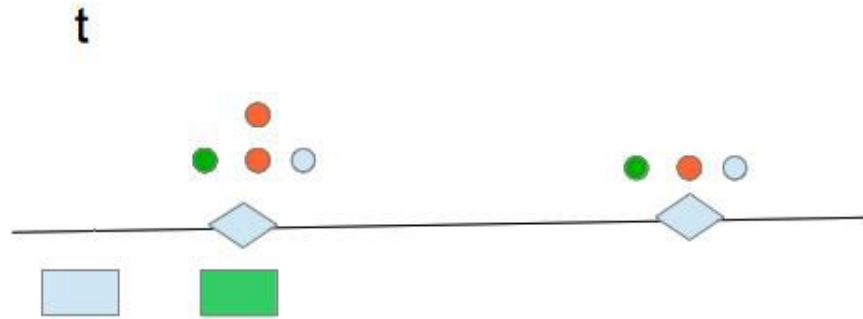
5km returning loop

20 stops 250m apart

Passengers queue at stop – having assigned themselves to either 1,2 or 4 size cars.

Rules: 1. Only one passenger accepted at each stop.

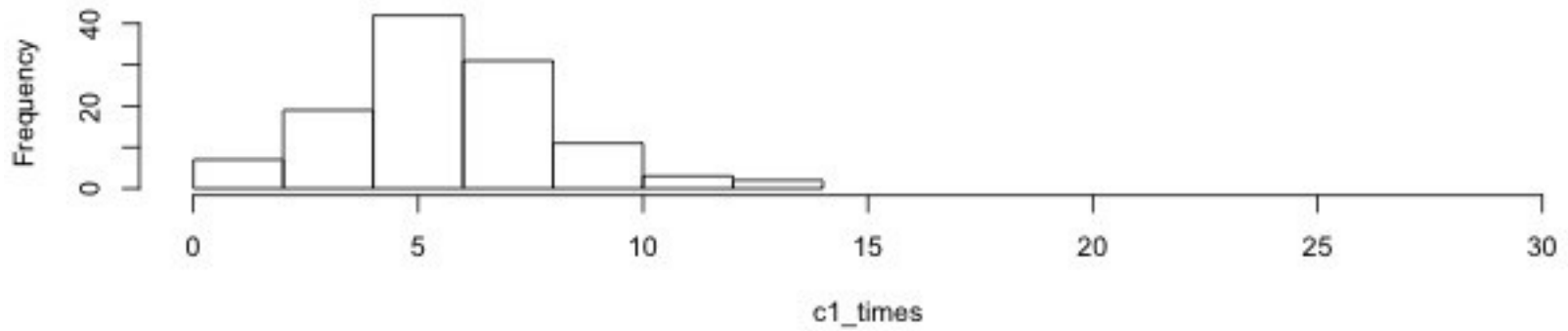
2. As each car returns, if it passes the longest queue for its type, then it turns around and heads for the station (early return).



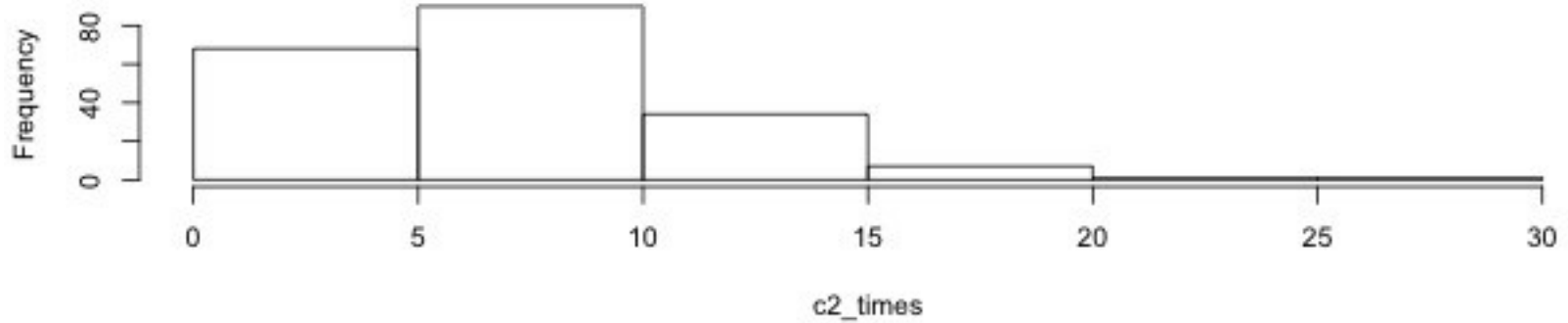
Green picks up 2 passengers  
Blue only picks up 1.



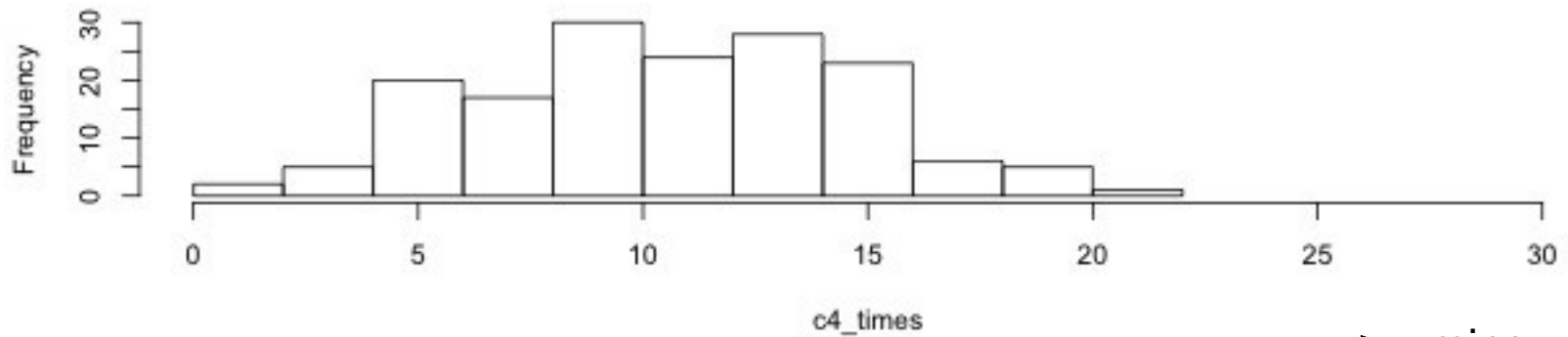
**Histogram of c1\_times**



**Histogram of c2\_times**



**Histogram of c4\_times**



→ mins