Some Perspective on Vehicles that are Automated/Driverless/Connected

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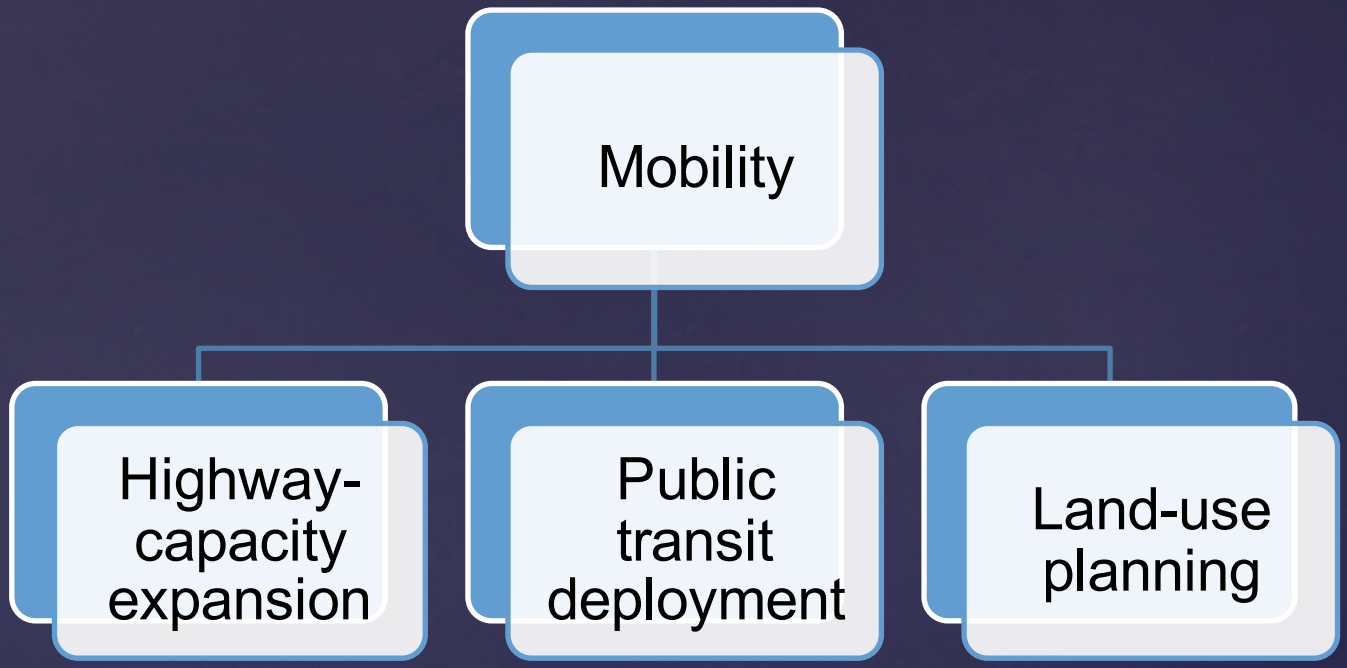
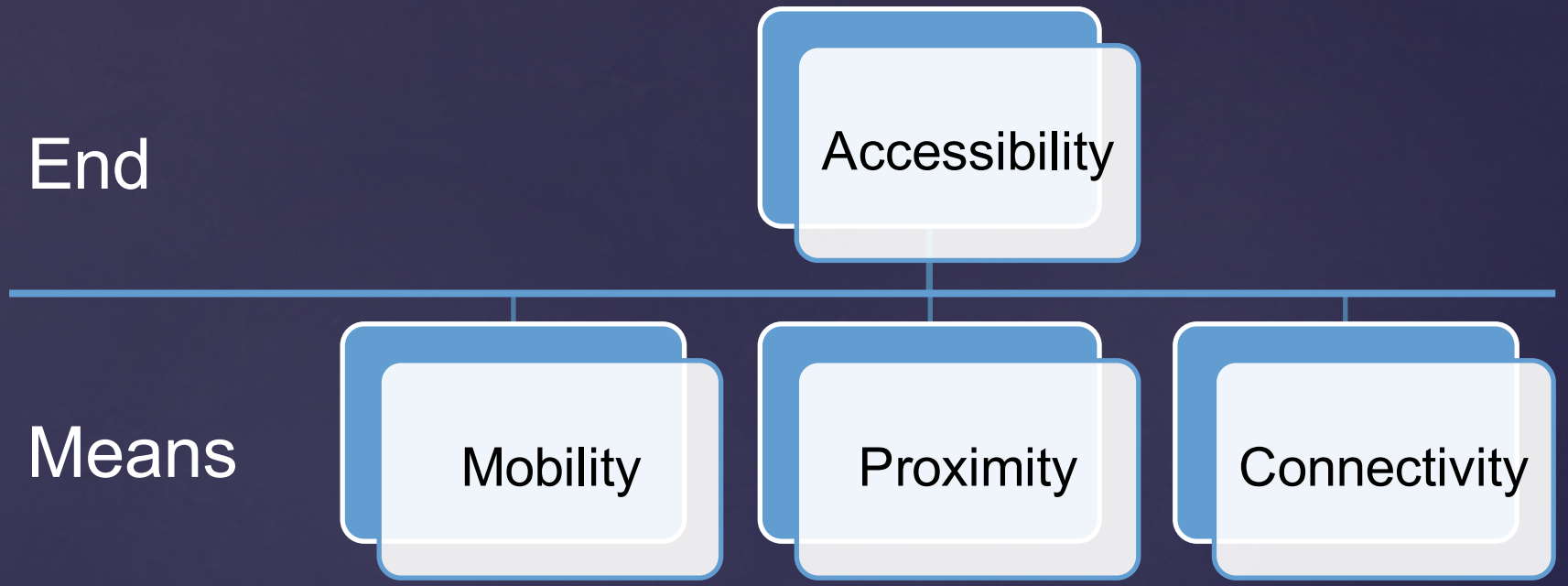


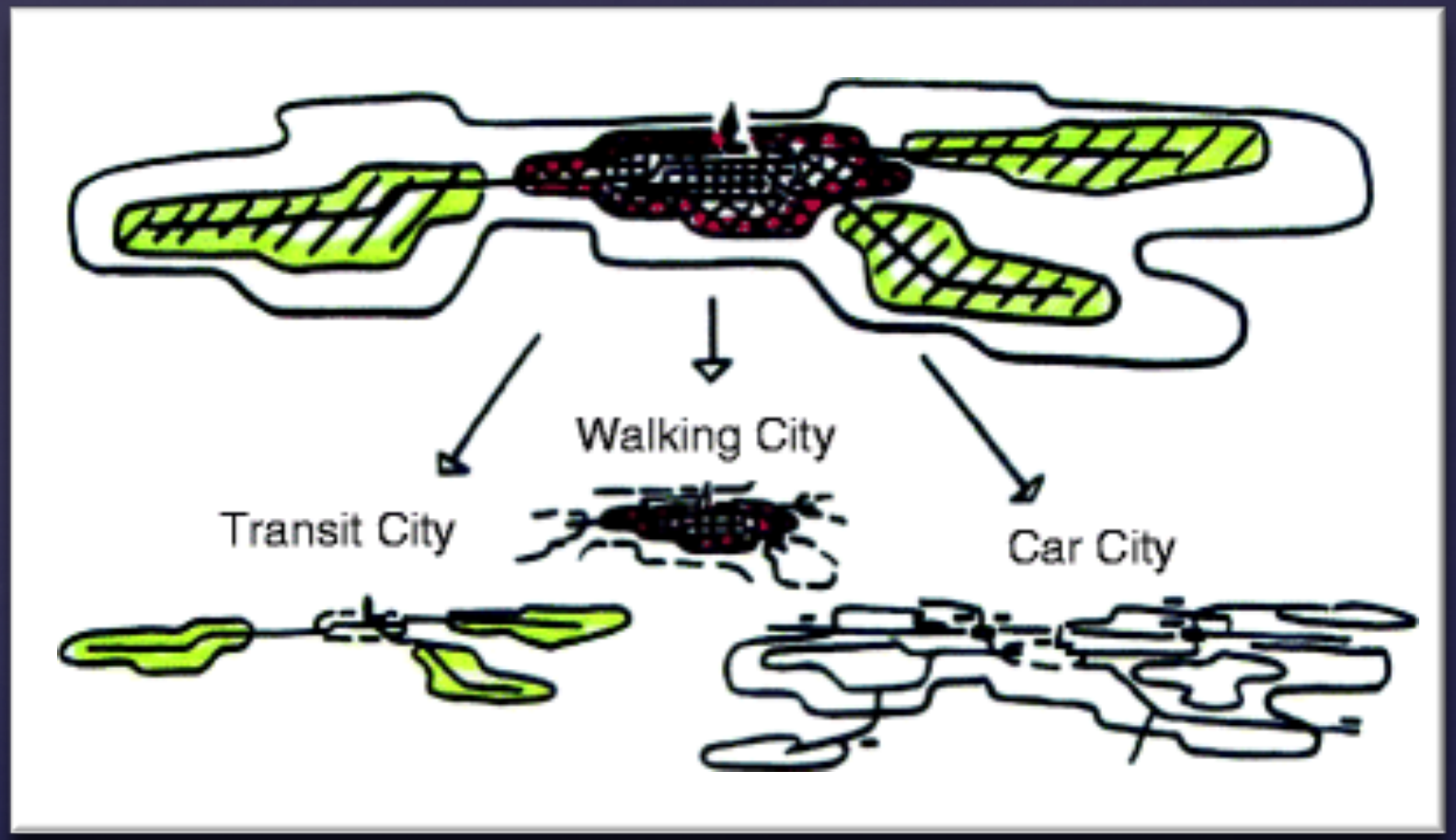
Traditional transportation goals



Revised for consistency with transportation's true purpose - how quickly can you get to the places you need or want to get to!

We value our time!

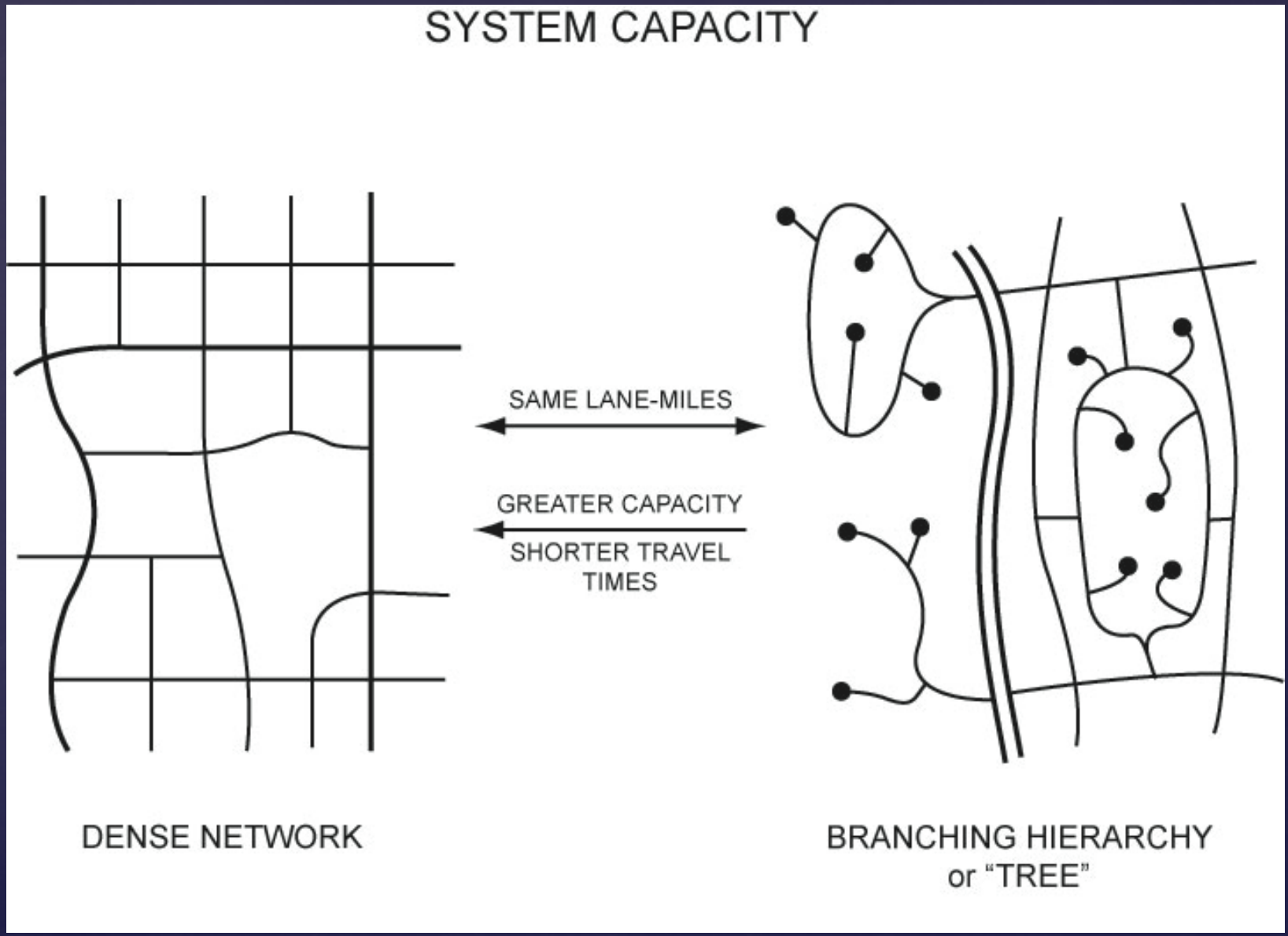
Will A/D/C vehicles simply add more auto-dependent sprawl?



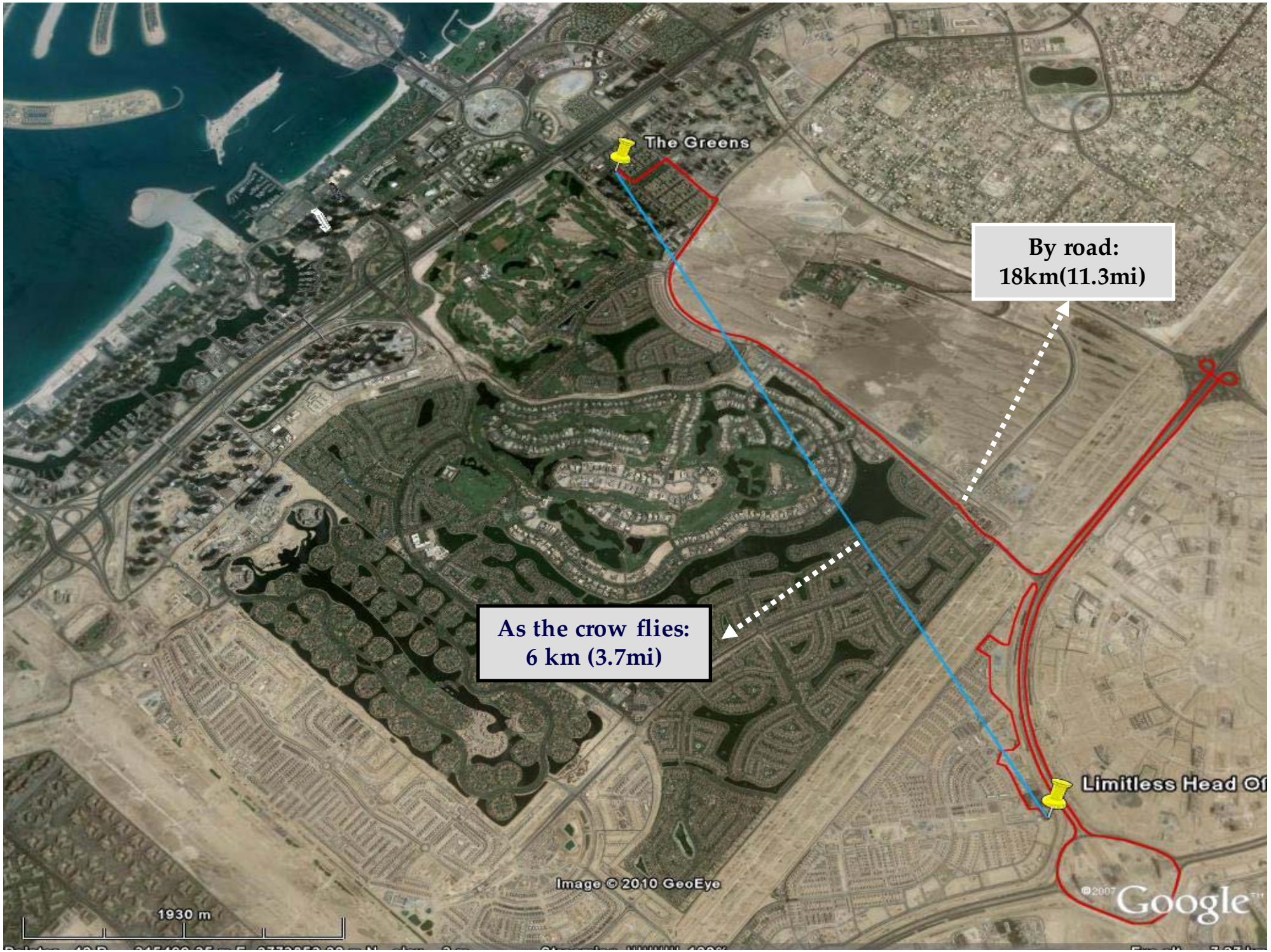
Evolution of the Grid

Garrick, Marshall

Network capacity grows exponentially with the number of connections- intersections (Metcalf's Law)

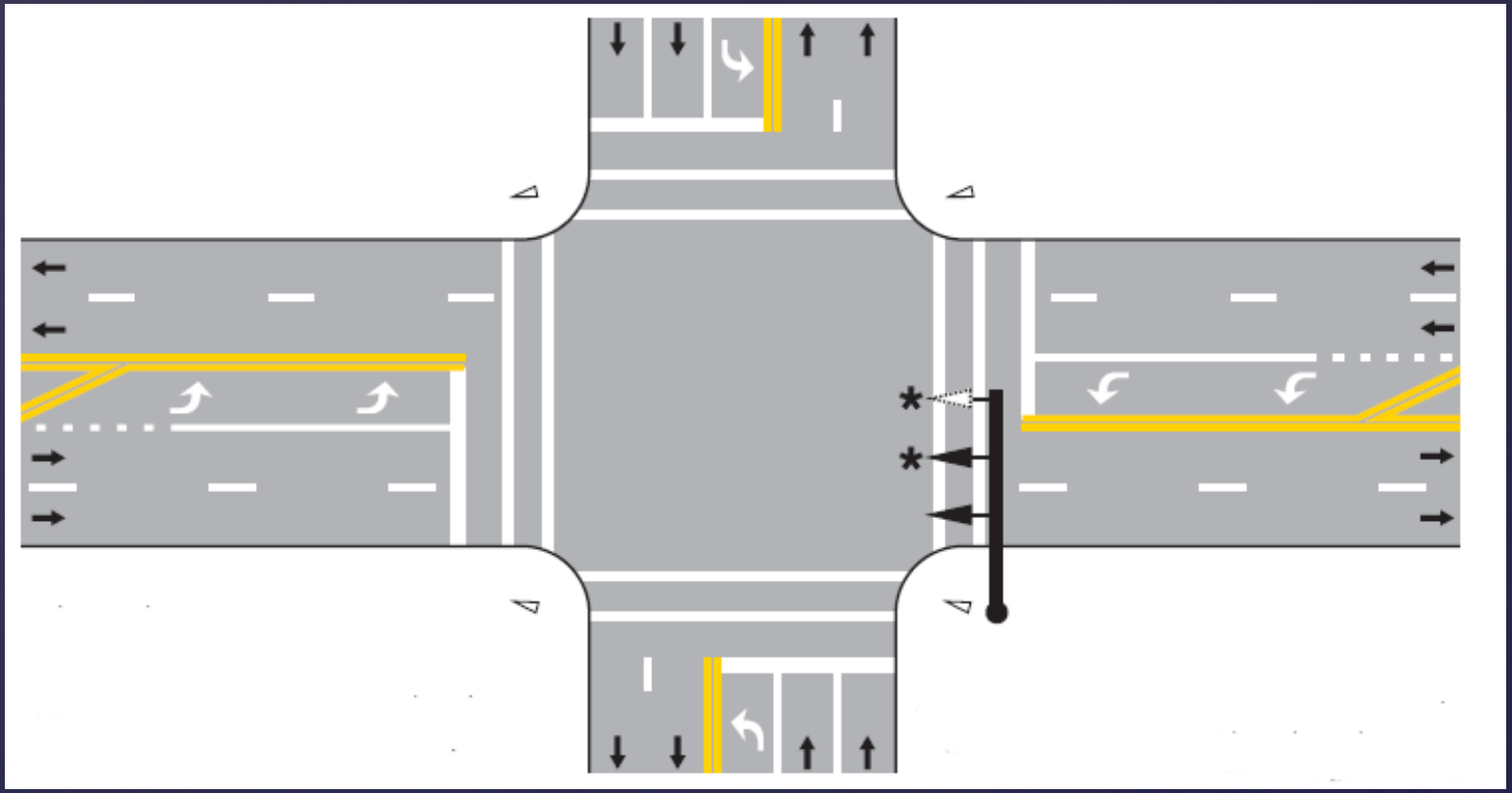


1 Mile
0
1 Km


The Greens
By road:
18km(11.3mi)
As the crow flies:
6 km (3.7mi)
Limitless Head Of
Image © 2010 GeoEye
1930 m
©2007 Google

Forget cul-de-sac sprawl!

Beware numerical traffic analysis that is often used to keep density low.



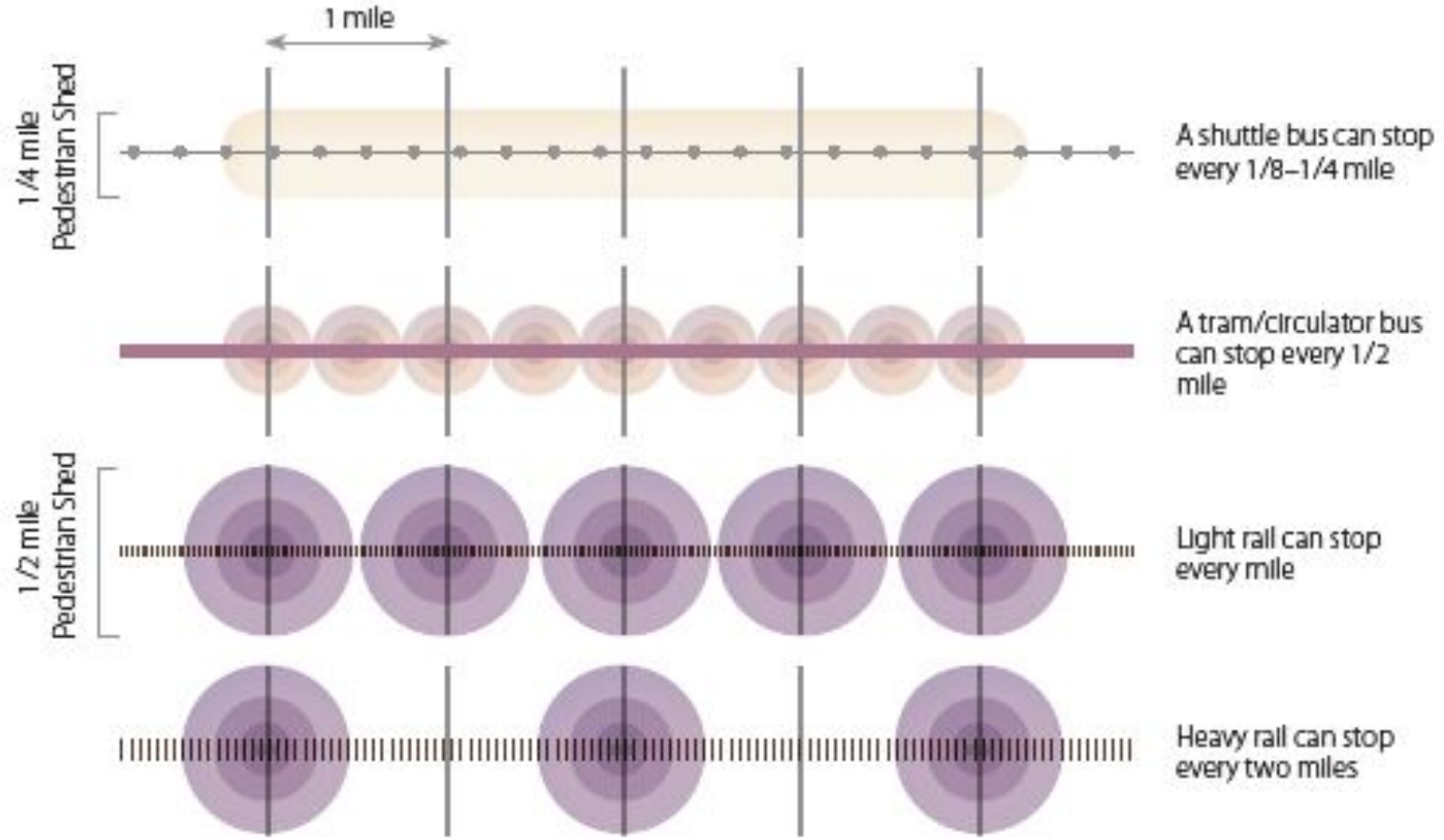
Planning and policy designed to accommodate the privately owned automobile will shape the world of self-driving cars in its own image. For the self-driving car to constitute an alternative to auto ownership - and make its full contribution to metropolitan accessibility - planning and policy must CHANGE.

Driverless/automated/connected vehicles can be private or shared –a BIG difference!

The only thing worse than a *single*-occupancy-vehicle is a *zero*-occupancy vehicle!

Driverless/Automated/Connected vehicles want to be physically connected to transit.

Use transit more efficiently



3-7. Pedestrian sheds and intervals of transit stops

Sprawl Repair Manual: Galina Tachieva, p. 40

Adjust the urban fabric into nodes.

3-11. Step Seven: Sector map assembled

Sprawl Repair Manual: Galina Tachieva, p. 44

Social Hubs with transit

A less dense Social Hub

Connect auto jitneys to nearby nodes

3-11. Step Seven: Sector map assembled

Share the ride *and* the vehicle Auto-jitney.

Campuses

Carpool lanes can include automated/driverless vehicles – from cars to vans to jitneys to buses.

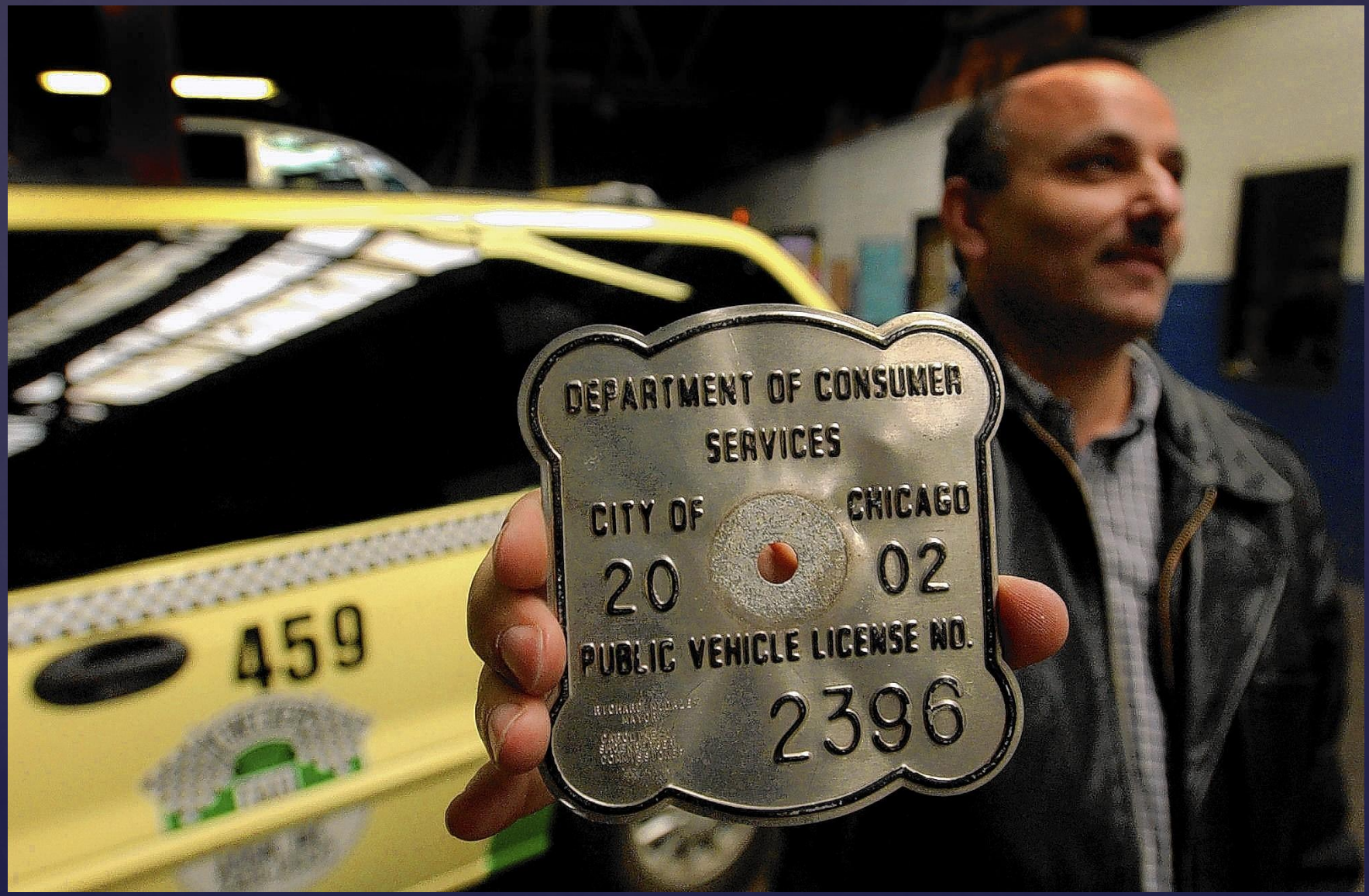
EZ10
EASY MILE
S 5329 BBZ

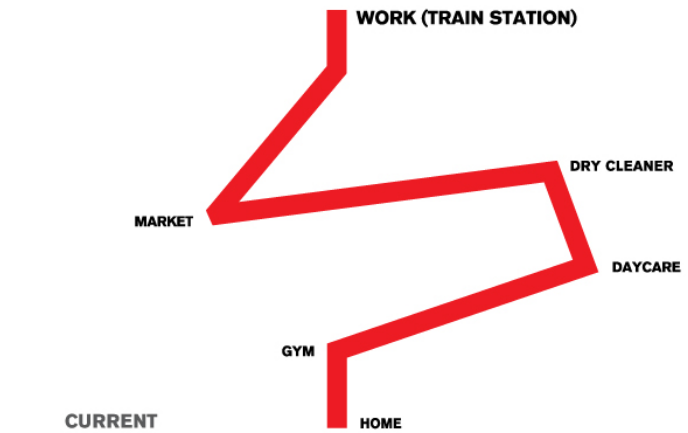
Heavy transit might connect *only* nodes.

Improve accessibility by offering highest level of service to close-in locations. Driverless cabs, Ubers, Lyft?

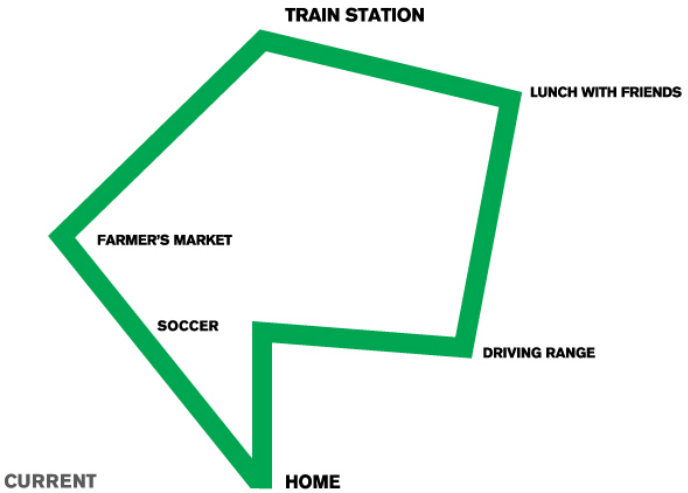
Share the vehicle, but the ride is private. (Google's bubble car)

Local taxi drivers will fight shared driverless/automated vehicles



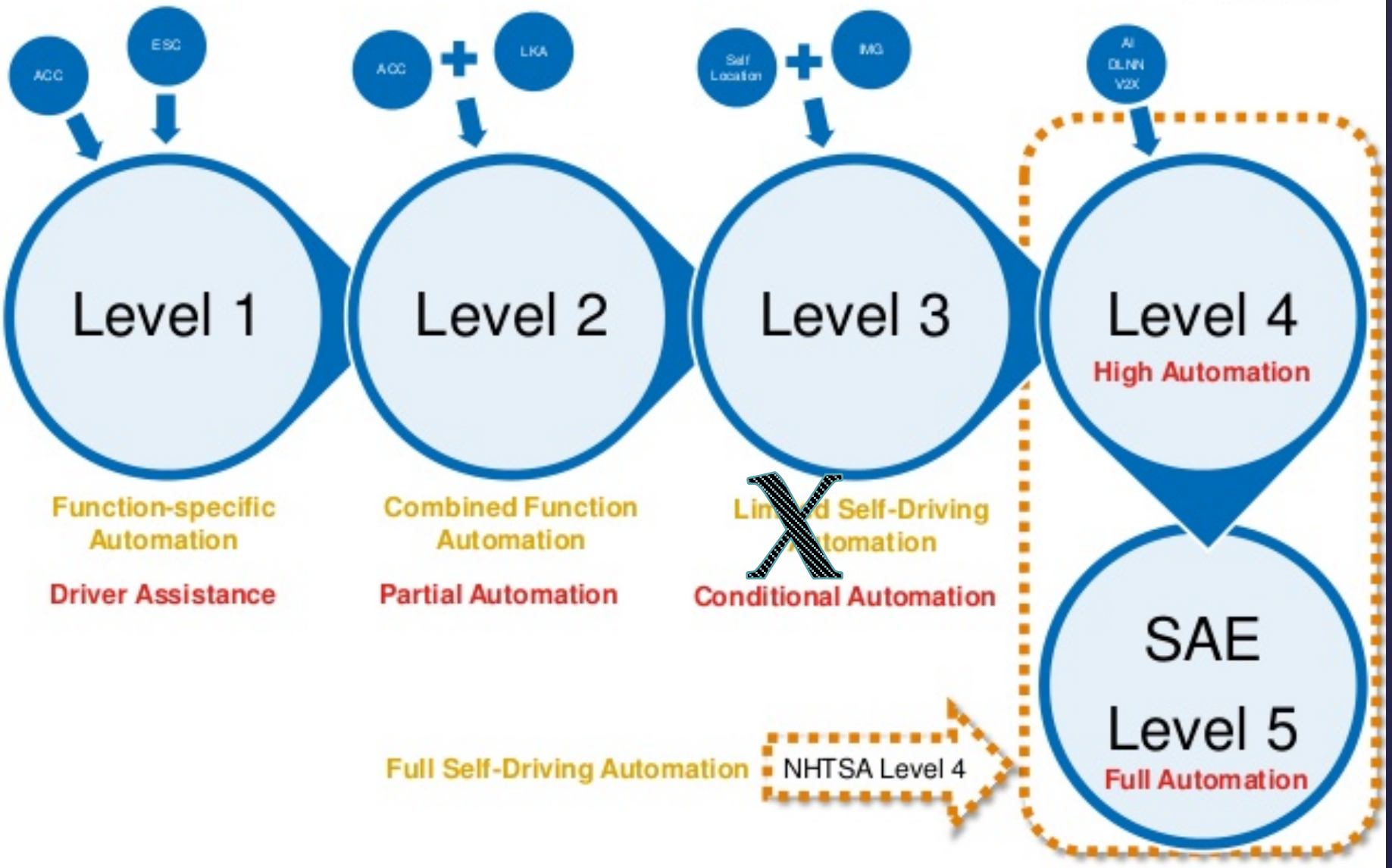

WORK (TRAIN STATION)
DRY CLEANER
MARKET
DAYCARE
GYM
HOME
CURRENT

WORK (TRAIN STATION)
MARKET
DRY CLEANER
DAYCARE
GYM
HOME
PROPOSED
PARENT


TRAIN STATION
LUNCH WITH FRIENDS
FARMER'S MARKET
SOCCER
DRIVING RANGE
HOME
CURRENT

TRAIN STATION
SOCCER
DRIVING RANGE
LUNCH WITH FRIENDS
FARMER'S MARKET
HOME
PROPOSED
LOCAL

NHTSA and SAE Levels of Automation

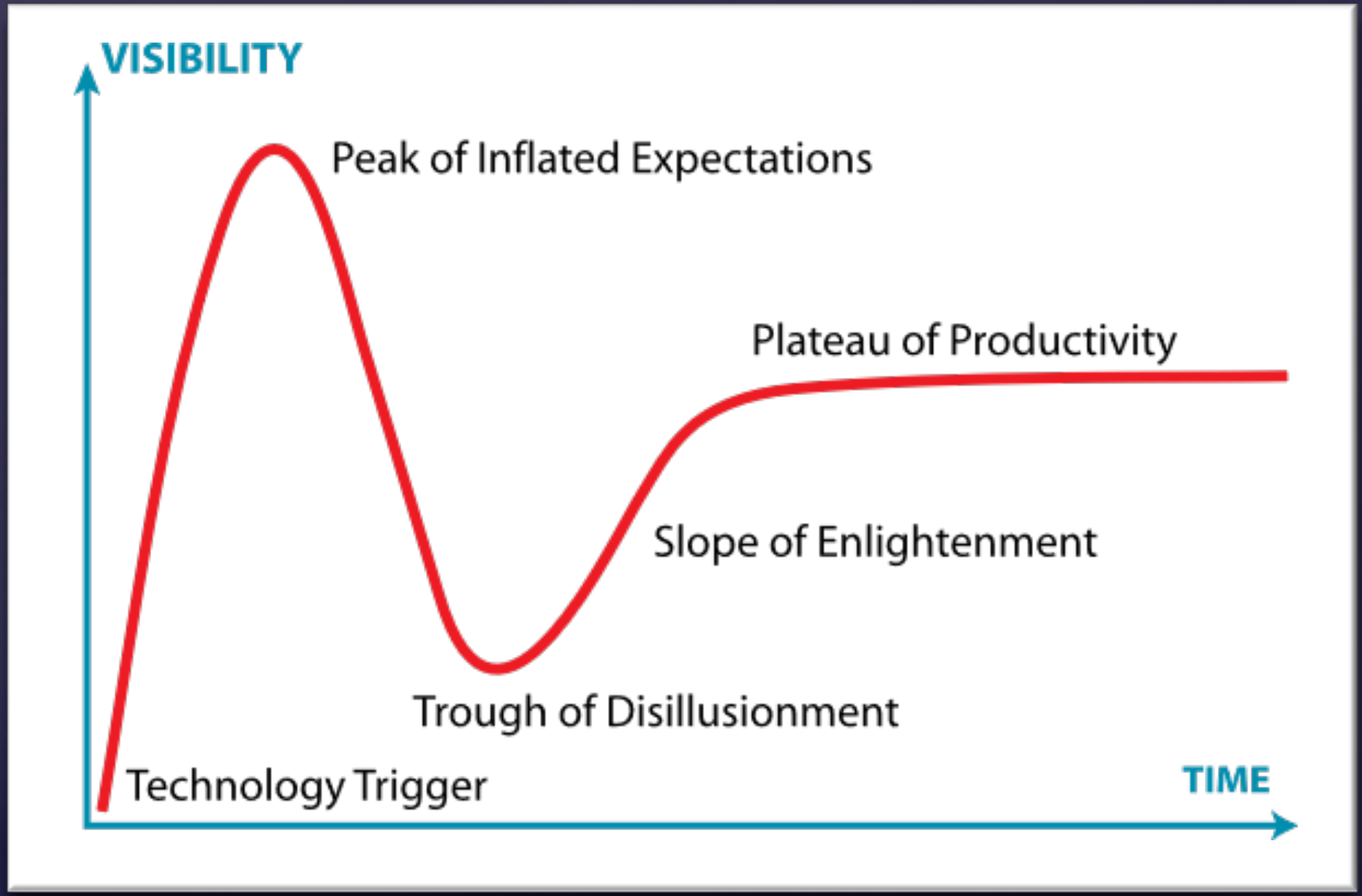


Safety?!

They are not yet competent at high speeds, except under expressway conditions. Ice and hydroplaning are still dangerous.

The working assumption is that A/D/C vehicles are safer than human-driven vehicles. People are not good at understanding when driving conditions are degraded and how they need to modify (mostly slow) their driving.

Adoption curve



Urban and suburban/rural visions for auto-vehicles

Vision #1, the urban one, has a clear direction

- Clear land-use strategy
- Clear transit strategy (50% shared vehicles & hi-capacity transit results in about a third less car-kilometers than with no hi-capacity transit.)

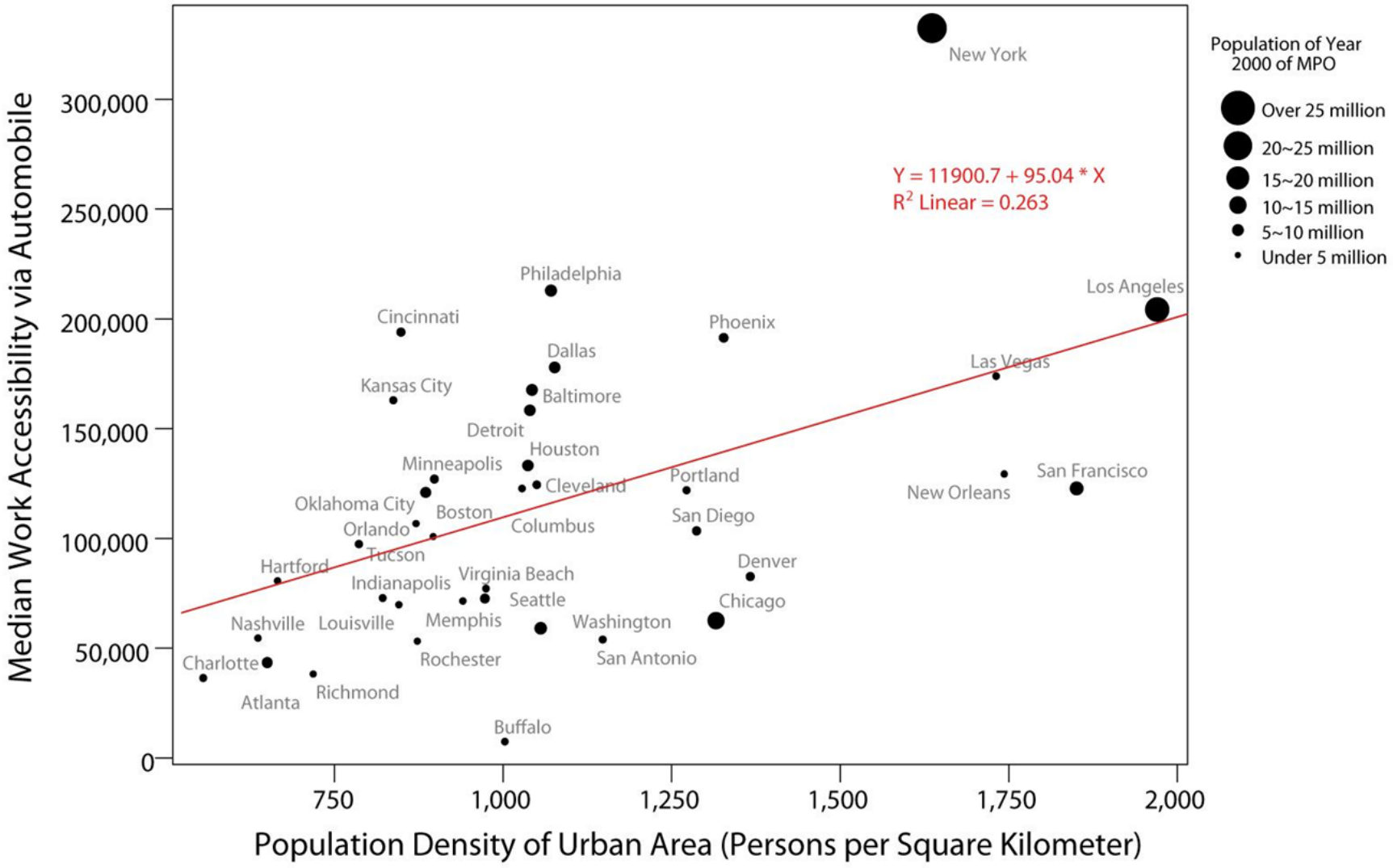
Vision #2, the exurban one, is less clear

- Hostility to the whole idea?
- Enthusiastic adoption for private use?
- Extreme sprawl?

Muchas Gracias

Mandate less off-street parking!

STARBUCKS COFFEE
NOW
OPEN


Median Work Accessibility via Automobile
300,000
250,000
200,000
150,000
100,000
50,000
0
750
1,000
1,250
1,500
1,750
2,000
Population Density of Urban Area (Persons per Square Kilometer)
Y = 11900.7 + 95.04 * X
R2 Linear = 0.263
Population of Year 2000 of MPO
Over 25 million
20~25 million
15~20 million
10~15 million
5~10 million
Under 5 million
New York
Los Angeles
Philadelphia
Cincinnati
Phoenix
Dallas
Las Vegas
Kansas City
Baltimore
Detroit
Houston
Minneapolis
Cleveland
Portland
San Francisco
New Orleans
Oklahoma City
Boston
Orlando
Columbus
San Diego
Tucson
Hartford
Denver
Virginia Beach
Indianapolis
Seattle
Chicago
Nashville
Louisville
Memphis
Washington
Charlotte
Rochester
San Antonio
Atlanta
Richmond
Buffalo