



21<sup>st</sup> century  
parking management



A white sign with a black border and several bullet holes. The sign contains the text "Colorado innovation: better signs".

Colorado innovation:  
better signs



THIS LIGHT  
NEVER TURNS  
GREEN

**CERTAIN DEATH  
IF ENTERED**



















**Drunken people crossing**



PLEASE  
SLOW  
DRIVELY

**RIGHT LANE  
MUST  
RIGHT LEFT**



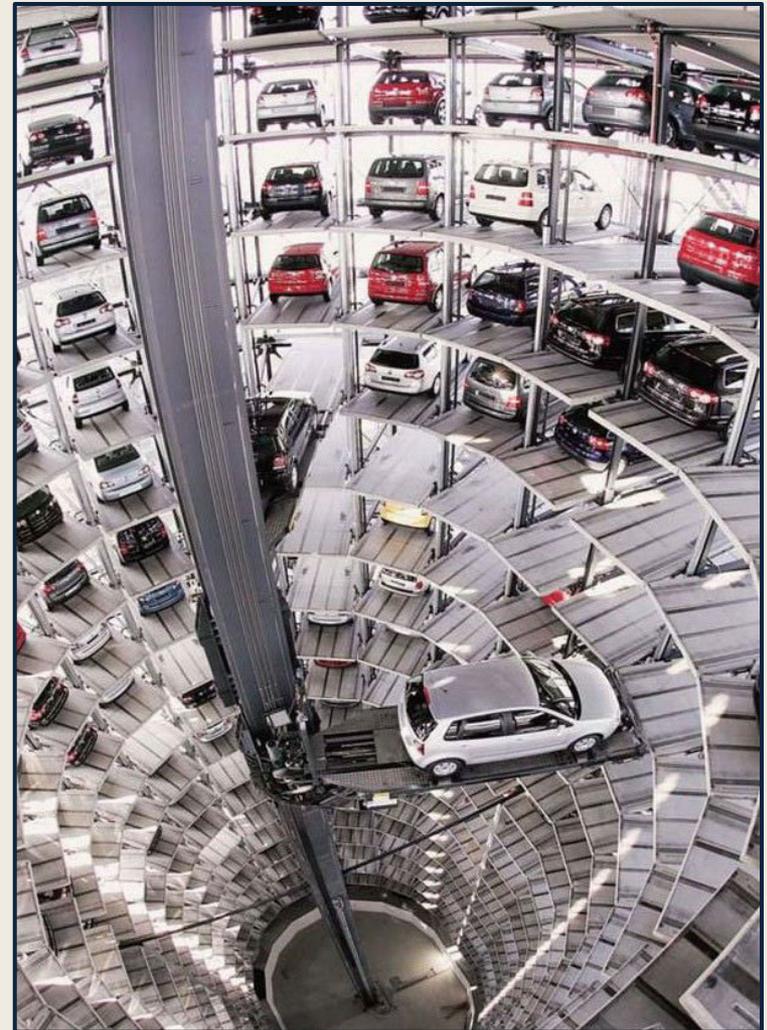


# tonight

1. mobility trends

2. parking challenges

3. parking management

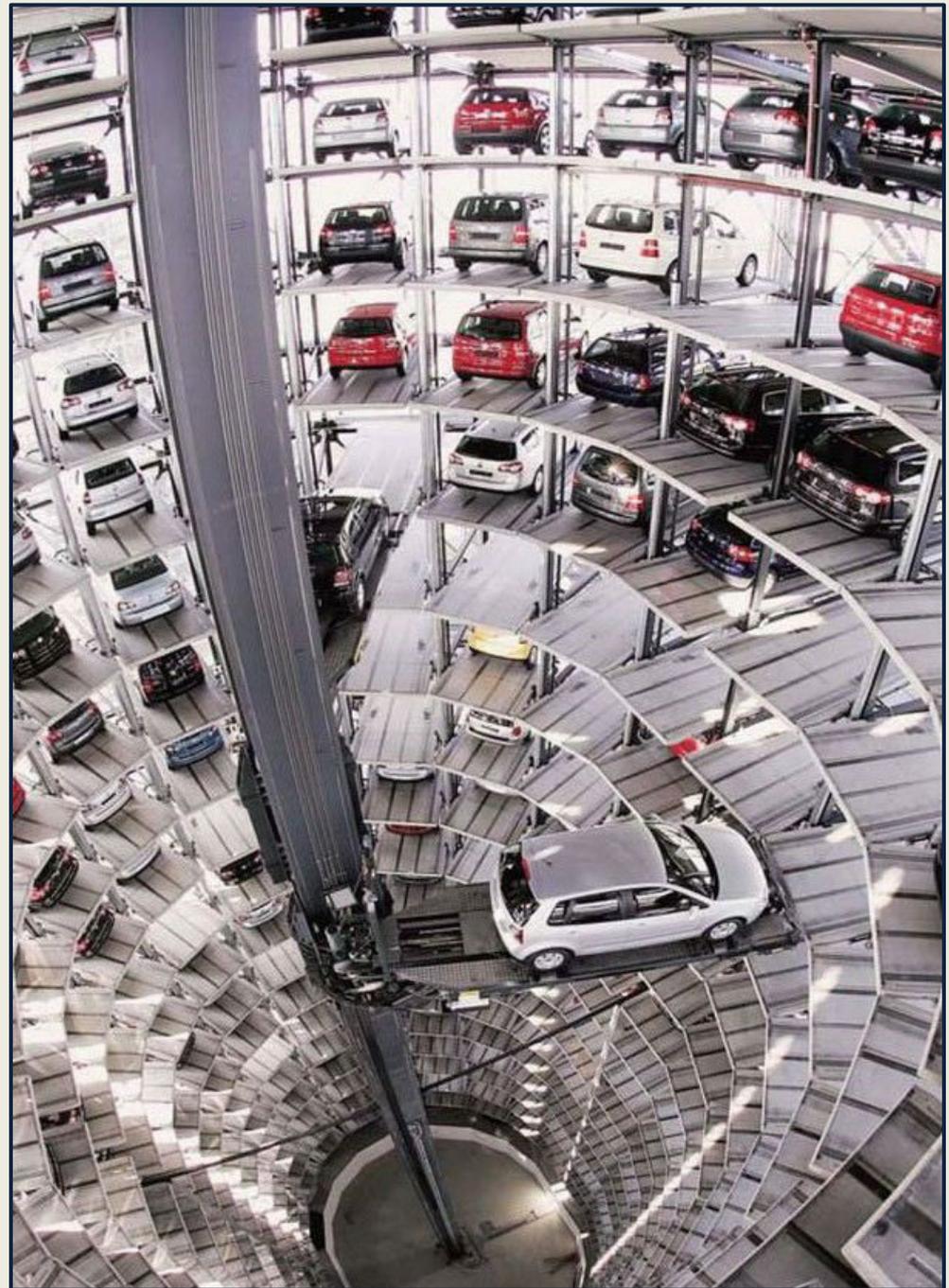


# tomorrow

1. basics

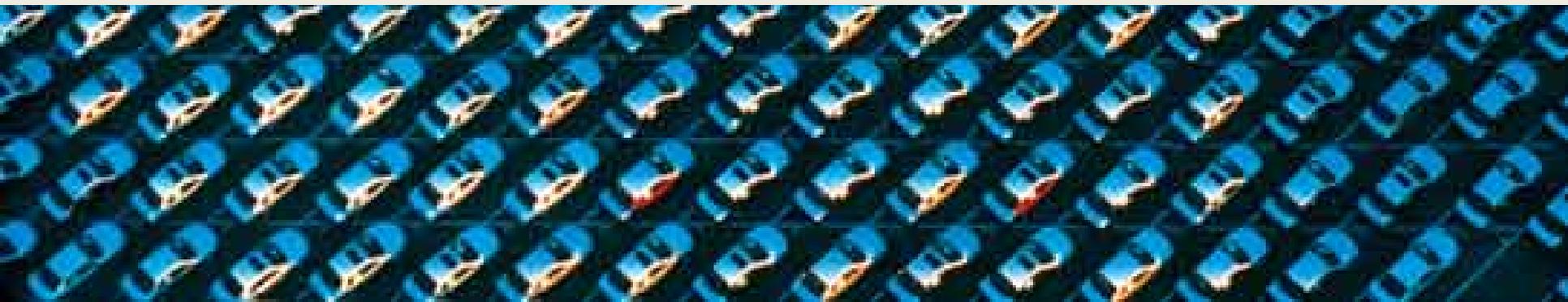
2. strategies

3. metrics





# 1. mobility trends



# 1. mobility trends

- ✓ eras in US development
- ✓ re-urbanization
- ✓ convergence
- ✓ travel demand



# underlying forces

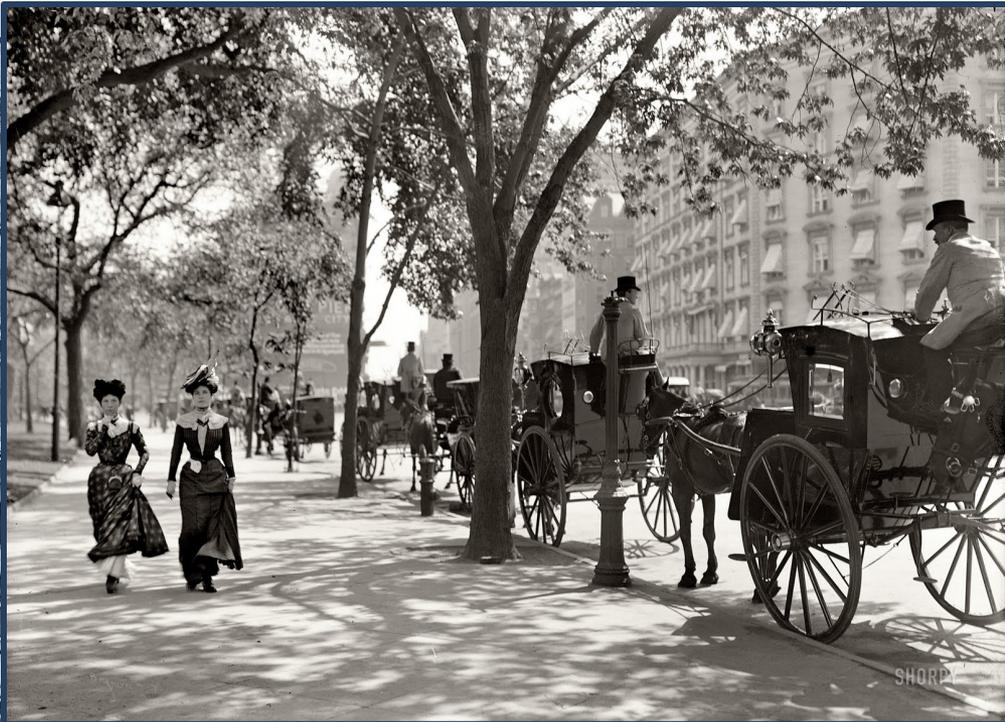
- ✓ culture
- ✓ economics



# culture + economics - 1800



# culture + economics - 1900



# culture + economics - 1950



# culture + economics – 21<sup>st</sup> century



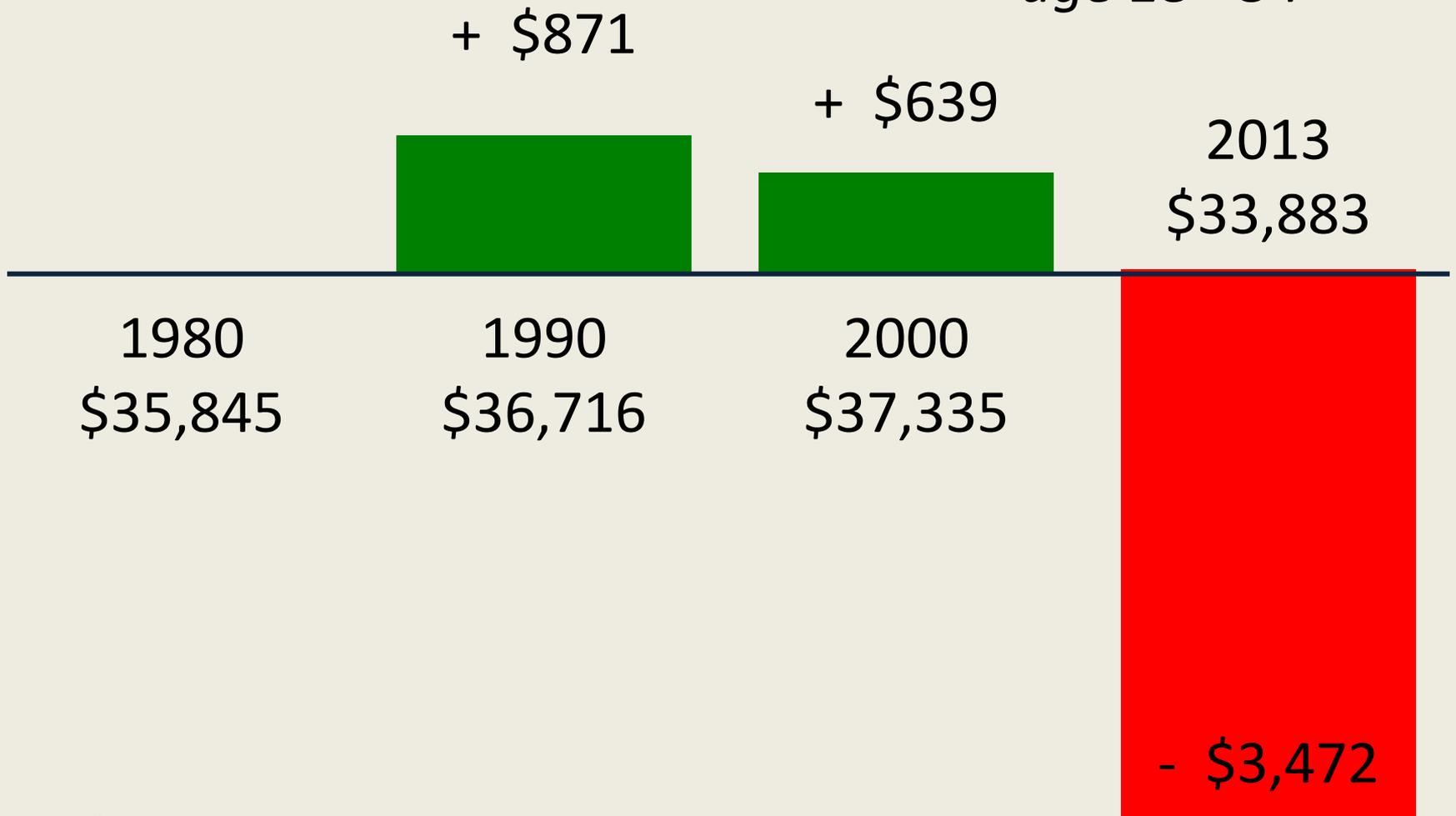
# culture



image credit: millennial marketing

# economics

*median earnings  
age 18 - 34*



# a return to city life



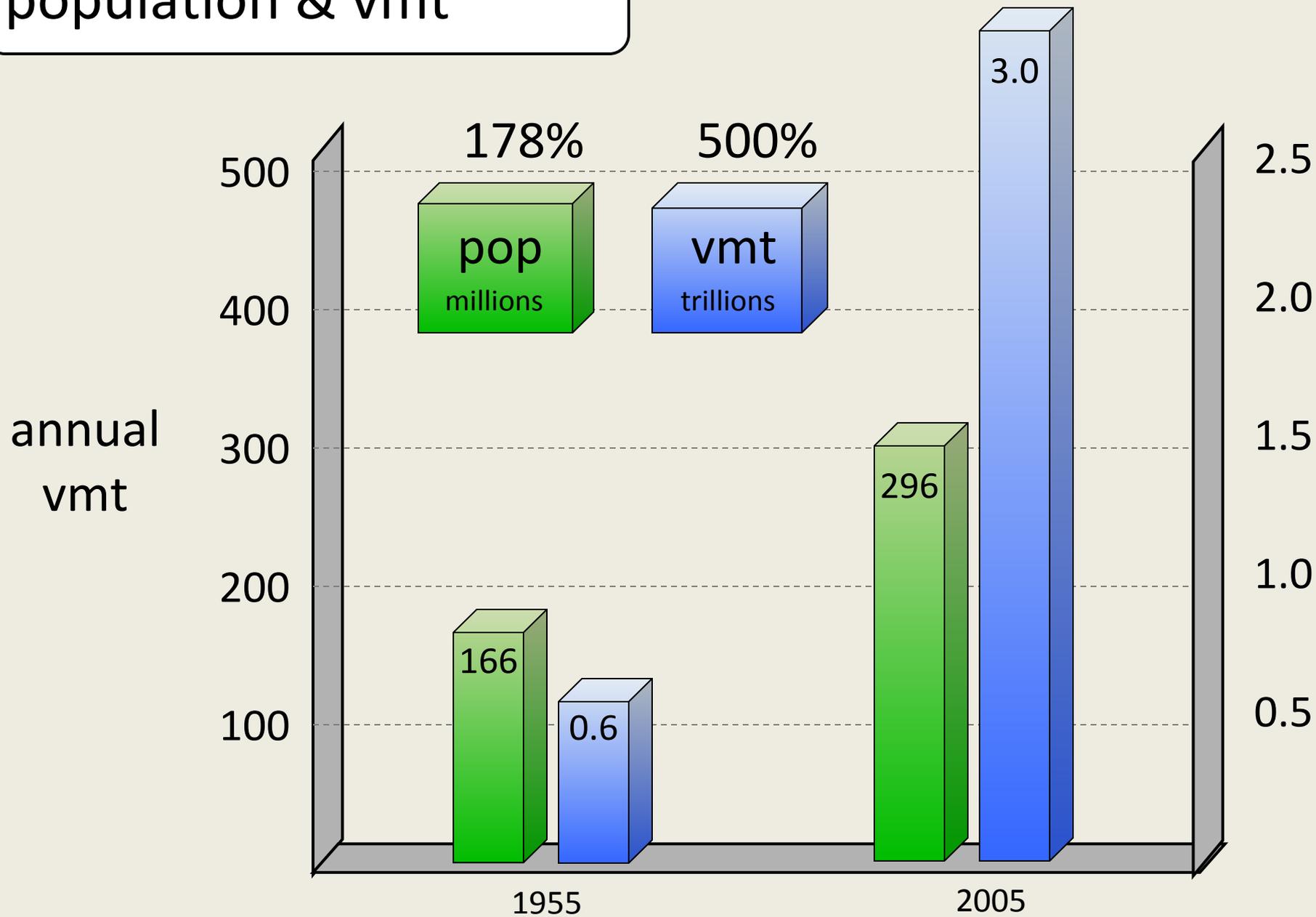


walkable, transit-served, complete neighborhoods

turnaround in driving



# population & vmt



# annual US vmt

2000 - 2013

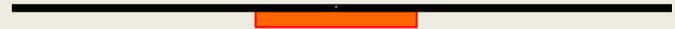
all  
vehicles



+ 9%

2006 - 2013

all  
vehicles



- 1%

# US per capita vmt

2000 - 2013

all  
vehicles



- 3%

2006 - 2013

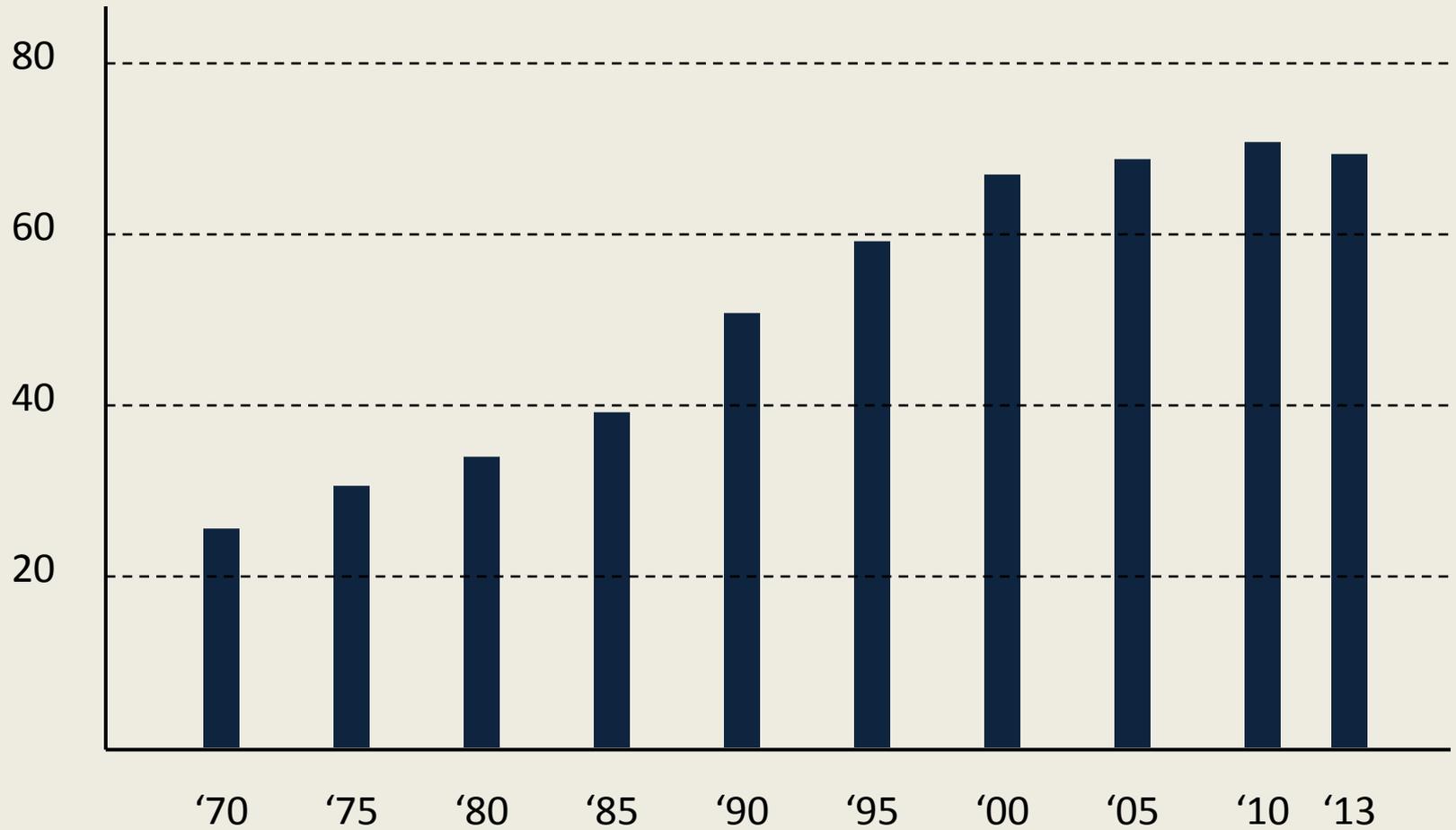
all  
vehicles



- 6%

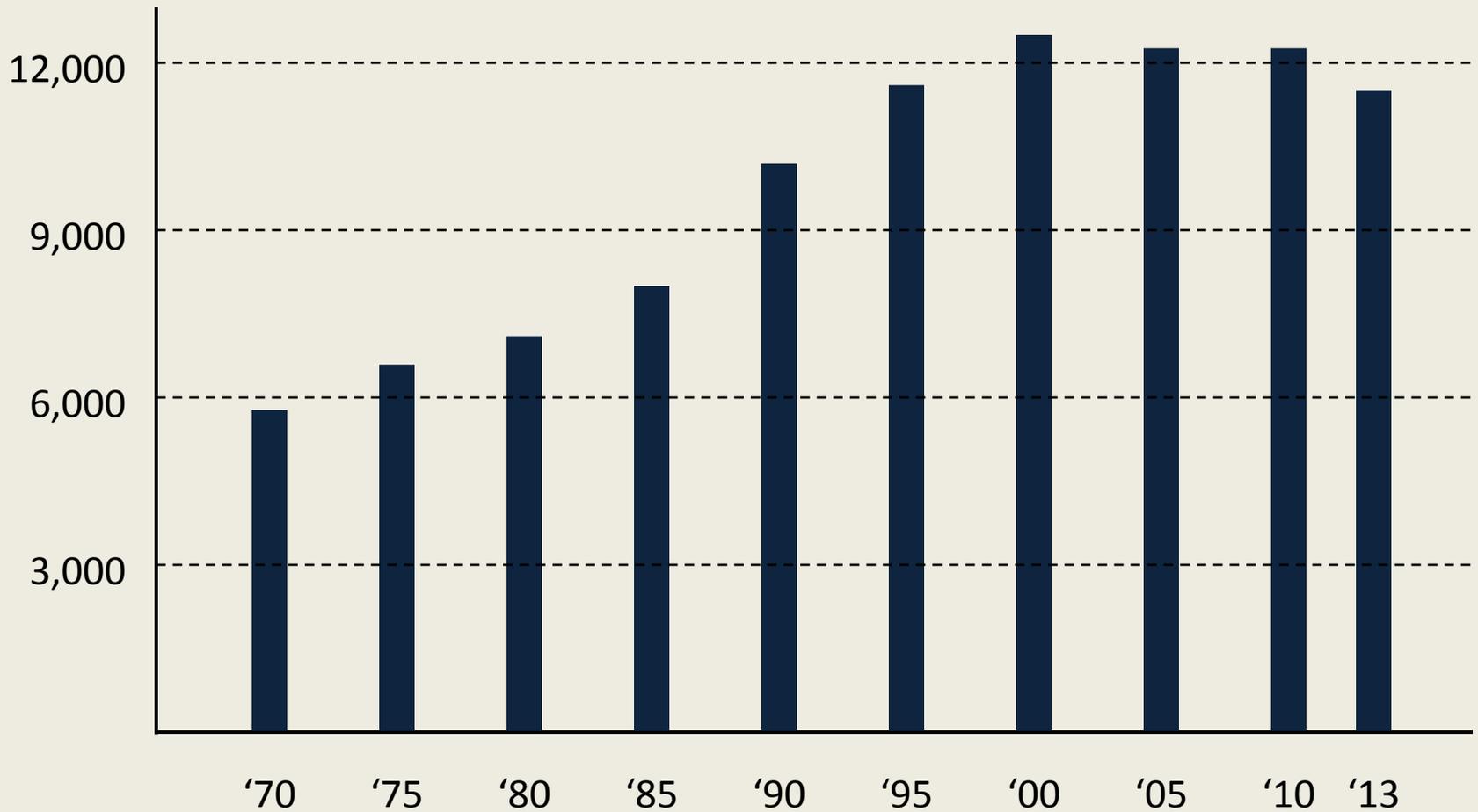
# Missouri vmt trend

(billions of miles/year)

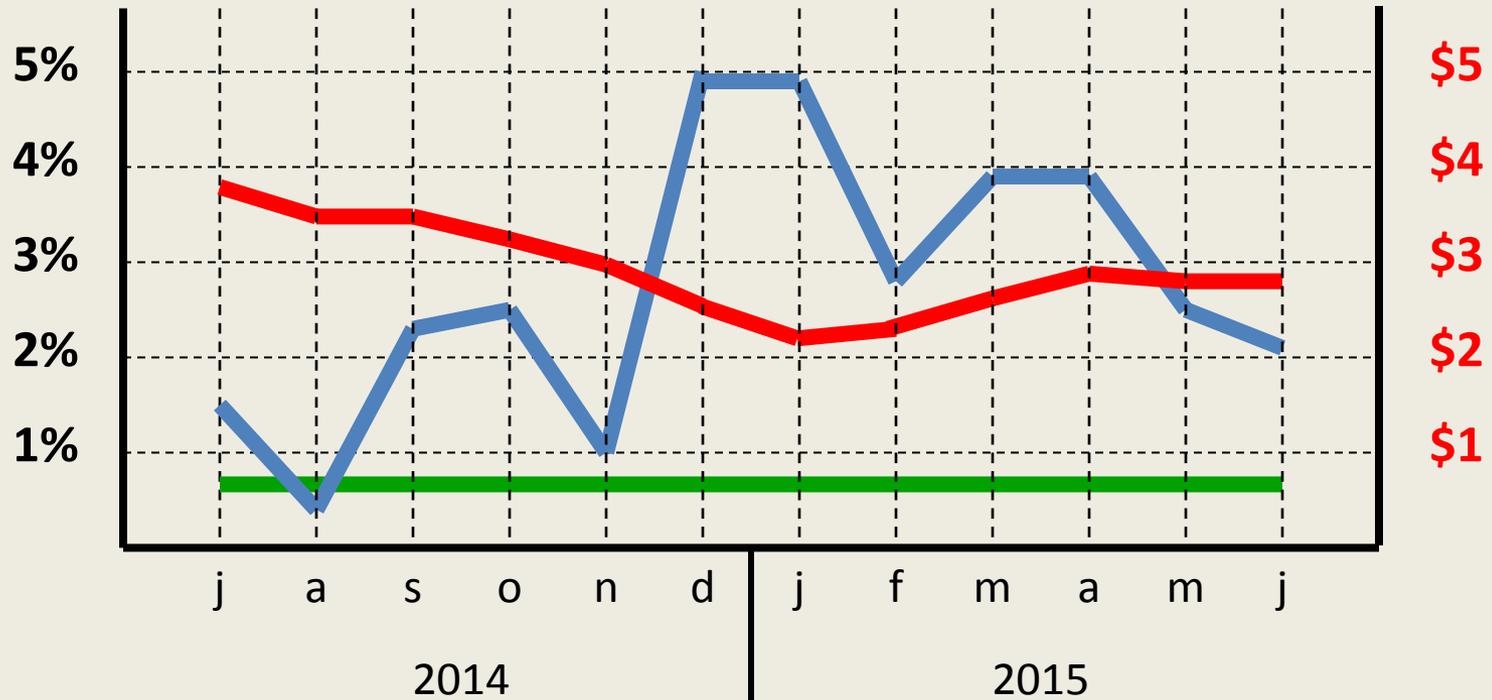


# Missouri vmt/capita trend

(miles/year)



# back to the good old days?



- gas price, national average price per gallon
- miles of vehicular travel, year to year % increase
- population, year to year % increase

# underlying trends

## demographics & economics

labor force  
participation rate



household income



driver license rate



vehicle ownership

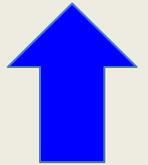


population

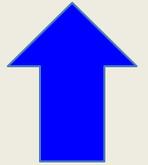


## traffic enablers

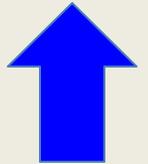
expanded roadways



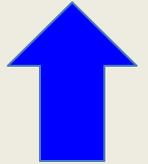
energy subsidy



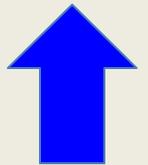
road subsidy



development patterns



low transit service



# underlying trends

## demographics & economics

labor force  
participation rate



household income



driver license rate



vehicle ownership



population



## traffic enablers

expanded roadways



energy subsidy



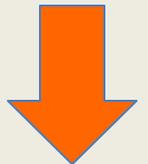
road subsidy



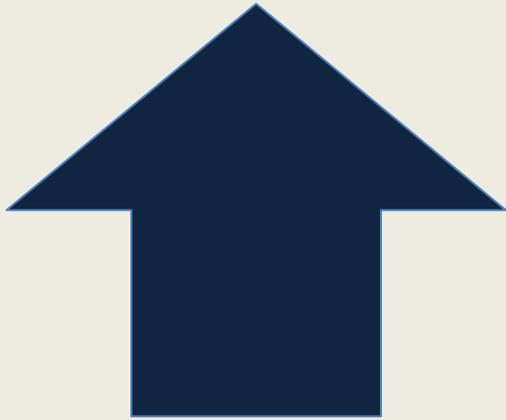
development patterns



low transit service

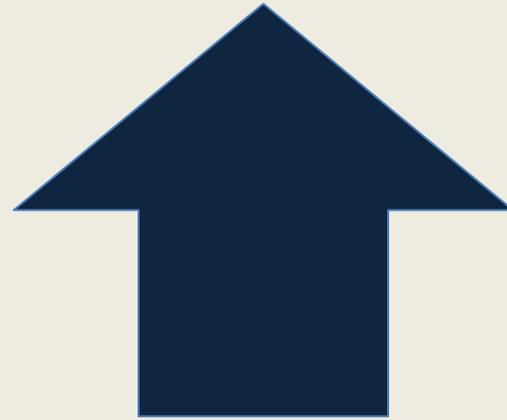


2085 vmt=



per capita vmt

x



population

transportation

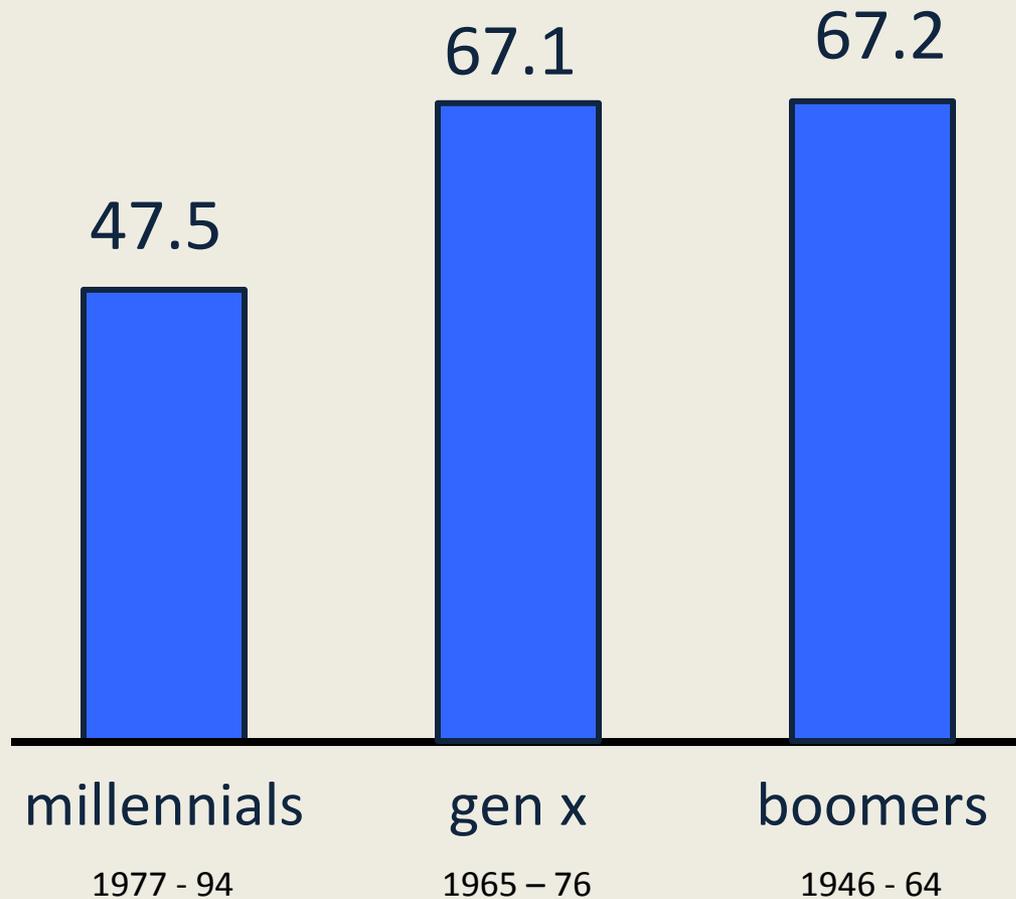
convergence

information

1. autonomous vehicles
2. its
3. big data
4. sharing economy
5. virtual transactions

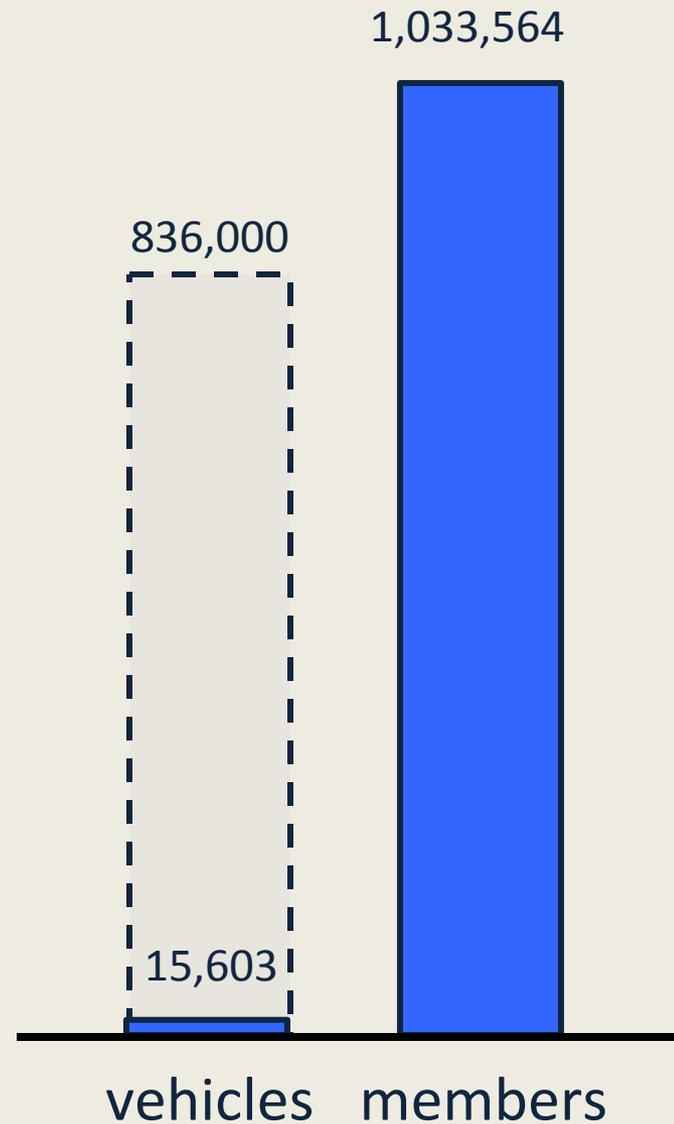
# car buying

(US 2014 vehicles purchased/1,000 people)



# car share arithmetic

(US Jan 1, 2013)





## 2. parking challenges



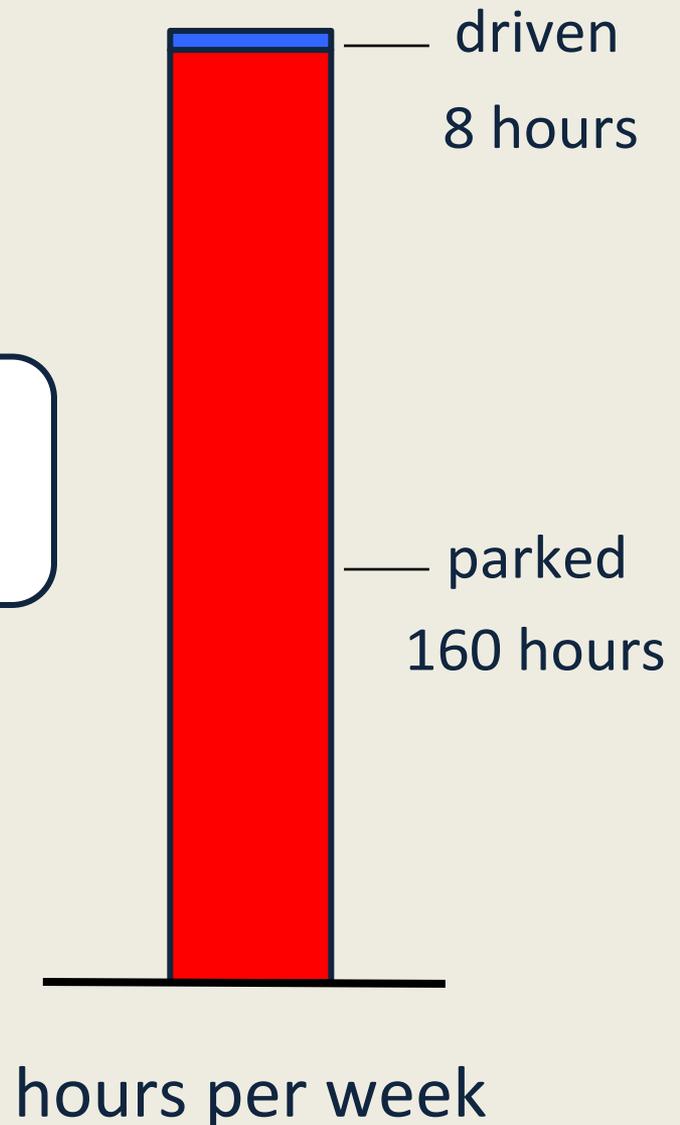
## 2. parking challenges

- ✓ supply dilemma
- ✓ land economics
- ✓ design matters
- ✓ no free parking



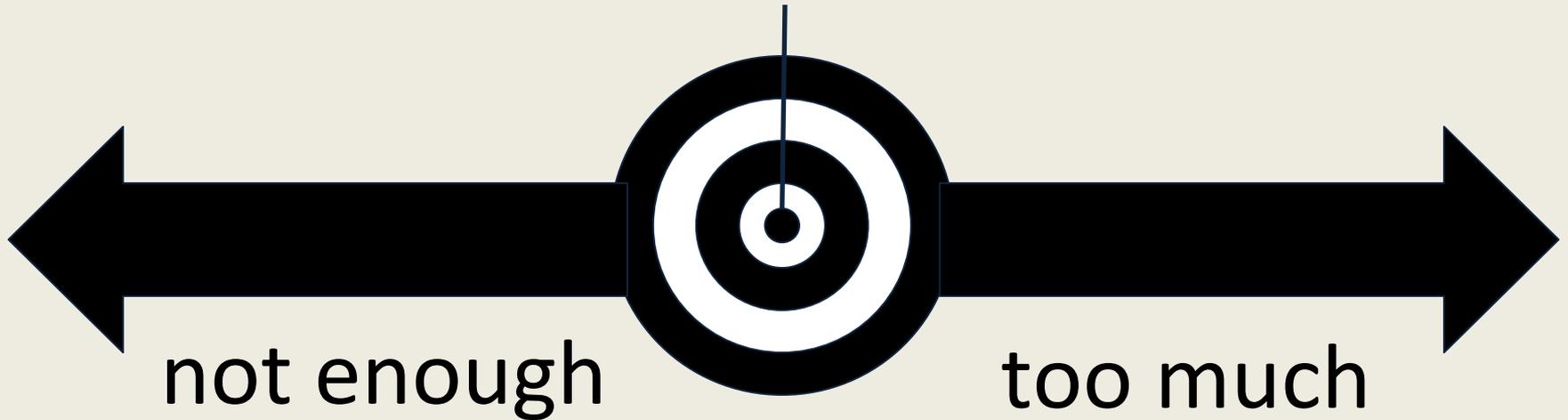
# the supply dilemma

personal vehicles in the US  
are parked 95% of the time

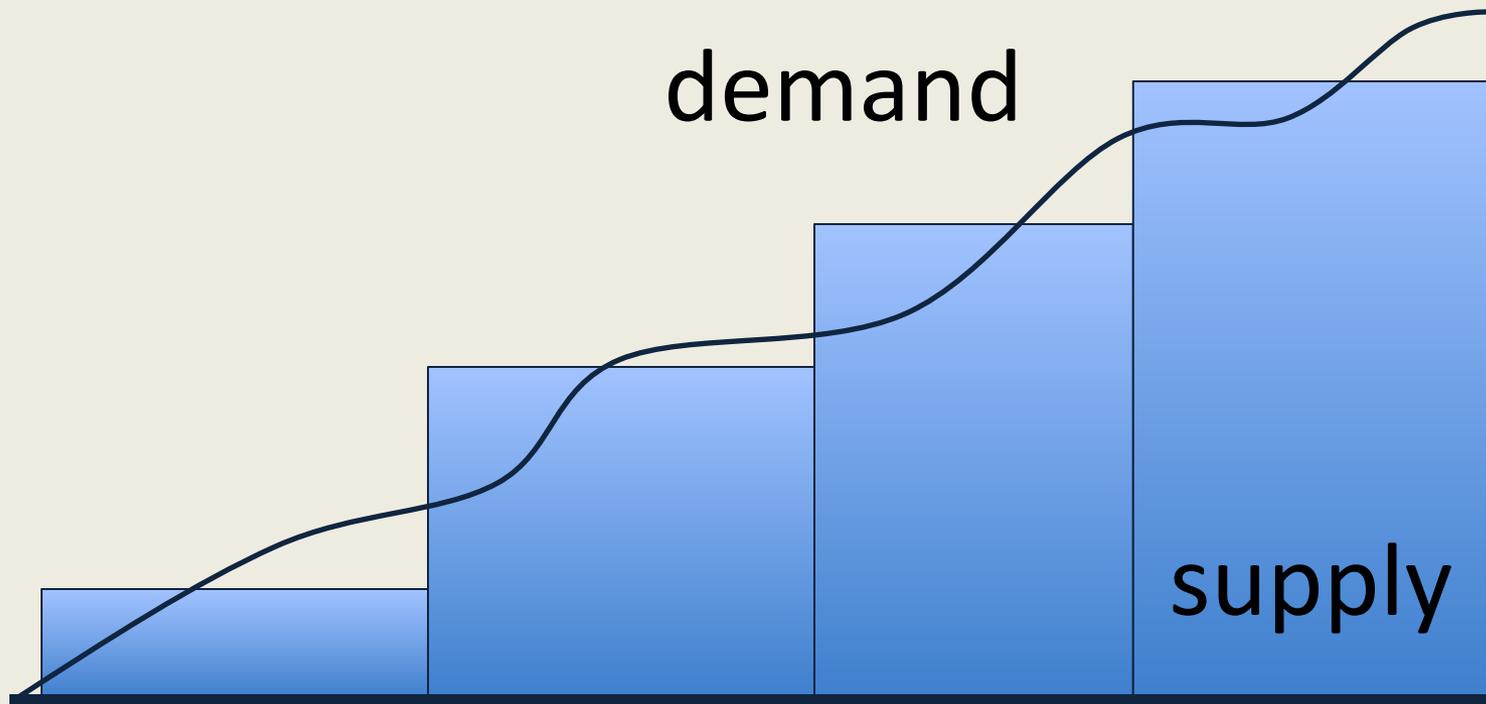


# the supply dilemma

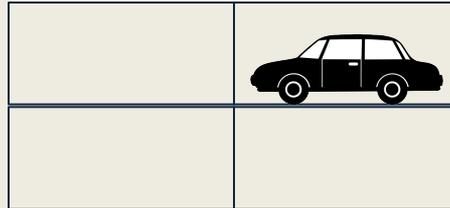
the right  
amount



# the supply dilemma



# the supply dilemma



4 spaces / car

# the supply dilemma

4 spaces/car

10:00 AM

4 spaces/car

10:00 PM

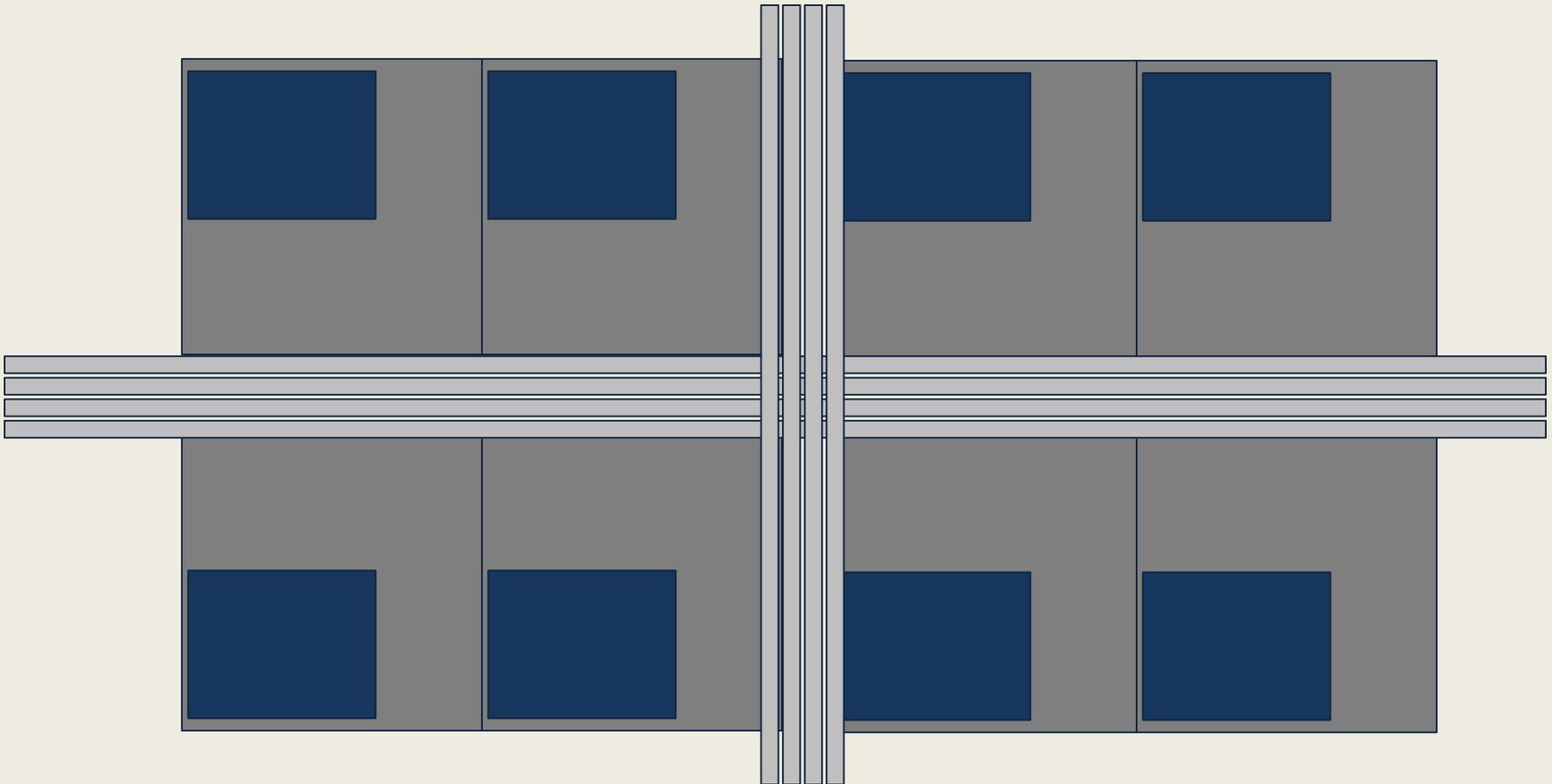
# land economics



@ 6 spaces/1,000sf,  
parking area = 2 X building area

# land economics

‘why there is  
no there there’





design matters

*suburban*



# design matters

*urban*



design matters



*neither*

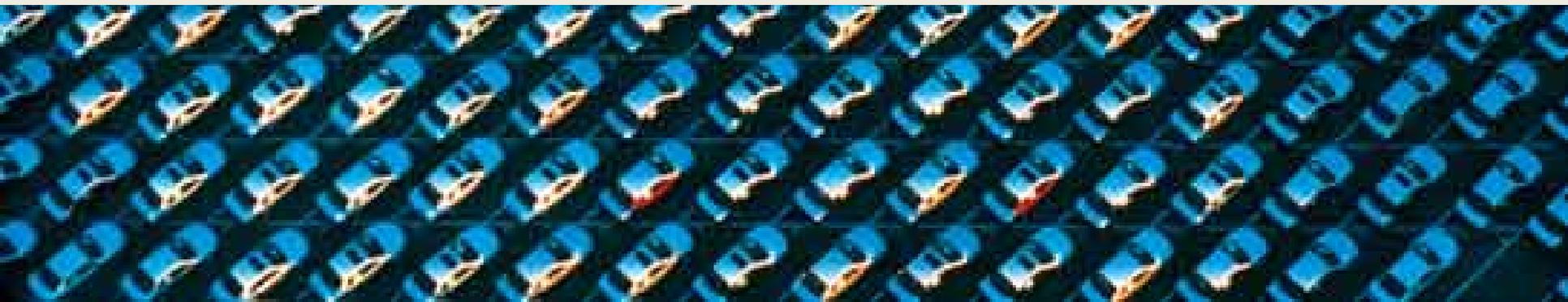
# no such thing as free parking

- ✓ land cost
- ✓ capital cost
- ✓ operations & maintenance

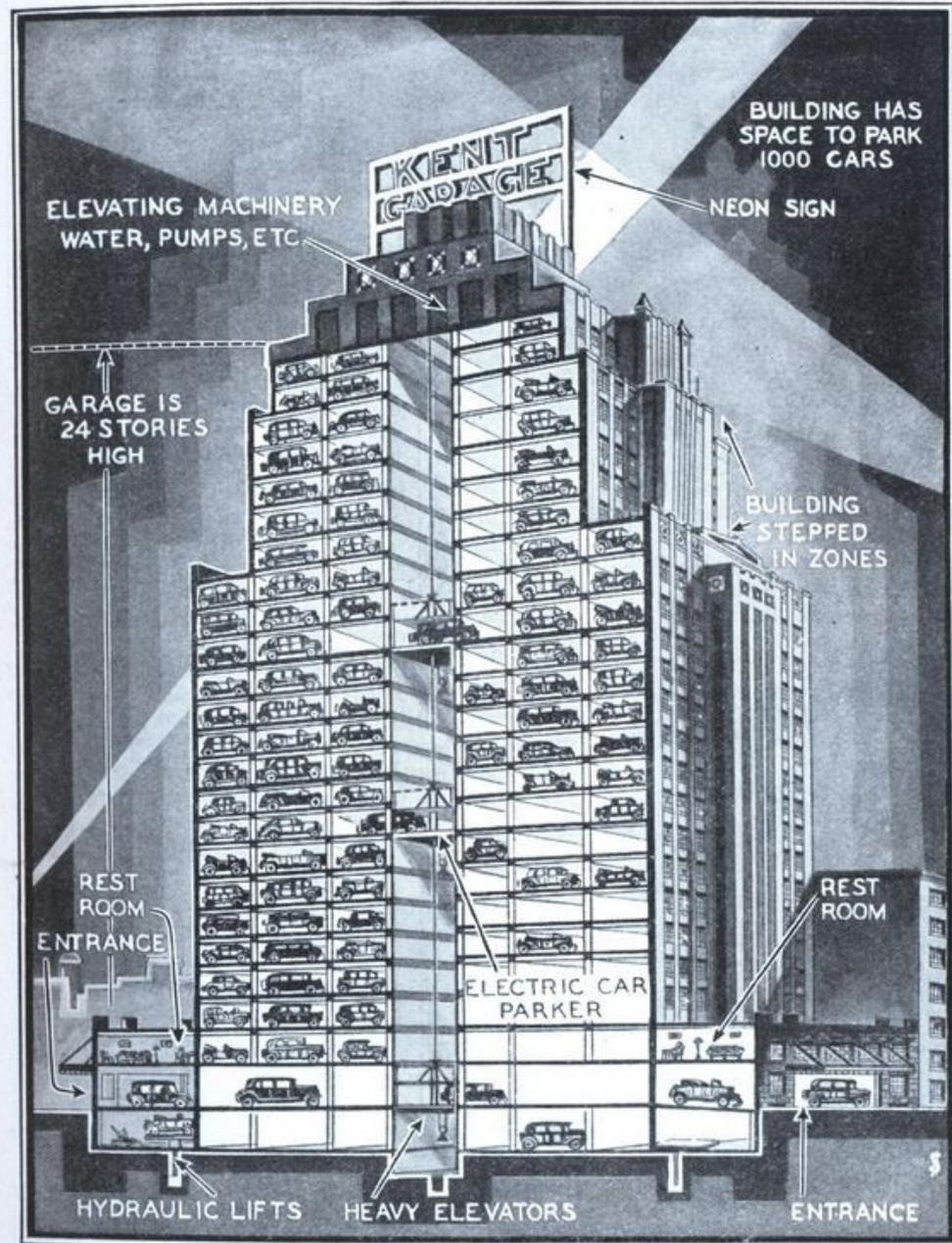




# 3. parking management



“give me control of parking and I will rule the world!”



# 3. parking management

- ✓ parking as a utility
- ✓ shared parking
- ✓ mode share
- ✓ enforcement
- ✓ pricing
- ✓ integrated approach





on-site parking: a suburban concept



*downtown utilities*

water

solid waste

sidewalks

storm sewer

sanitary sewer

parking



## parking as a utility

- ✓ shared resources
- ✓ reduced costs
- ✓ fair-share funding
- ✓ management and operations

*“park once”*



Two small signs on a black pole, one with a red and white logo and the other with a black and white logo.

MANICURE & SPA

**SLEEK MEDSPA**  
The skin you seek  
Laser Hair Removal  
up to 90% hair reduction in unwanted areas  
women's  
**UPPER LIP**  
only \$49.95  
limited time offer  
men's  
**BACK**  
only \$124.95  
Call 1-800-SLEEK-1234

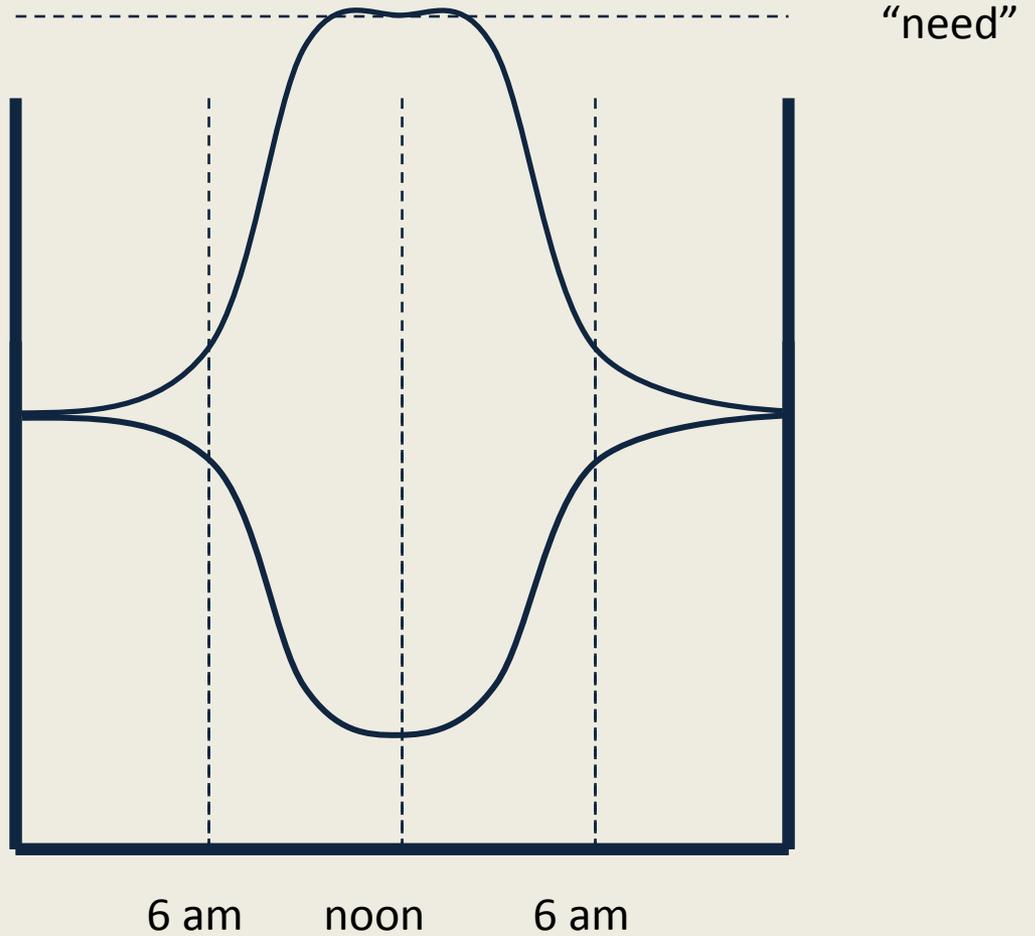
Joseph Ribkoff  
SOUTHWESTERN  
Sleek Medspa

MANICURE & SPA  
\$35

**SLEEK MEDSPA**  
COME IN FOR A  
FREE CONSULTATION!

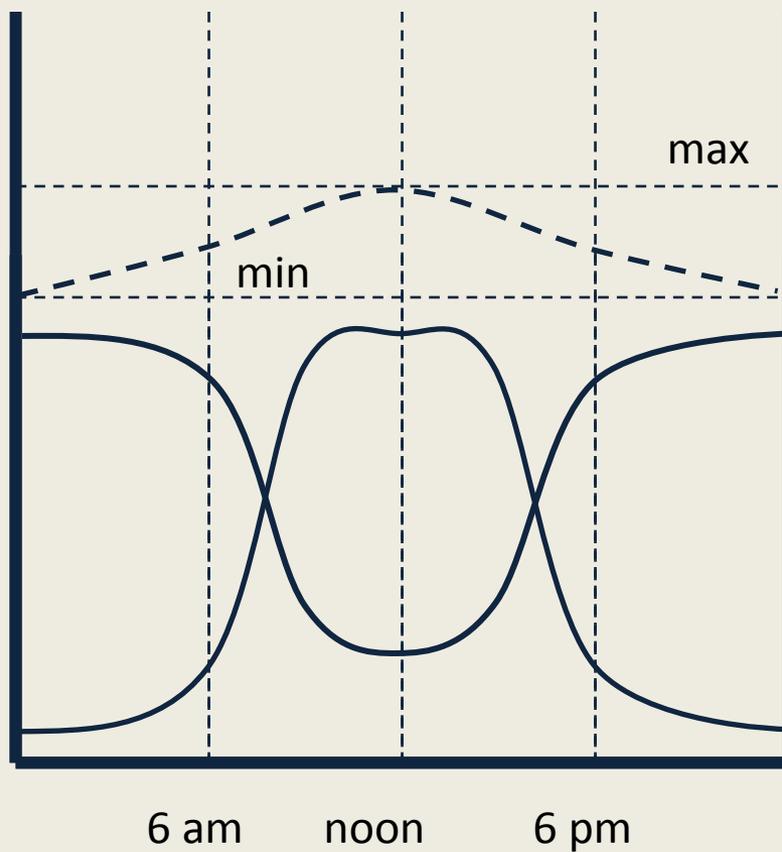
traditional

residential + office



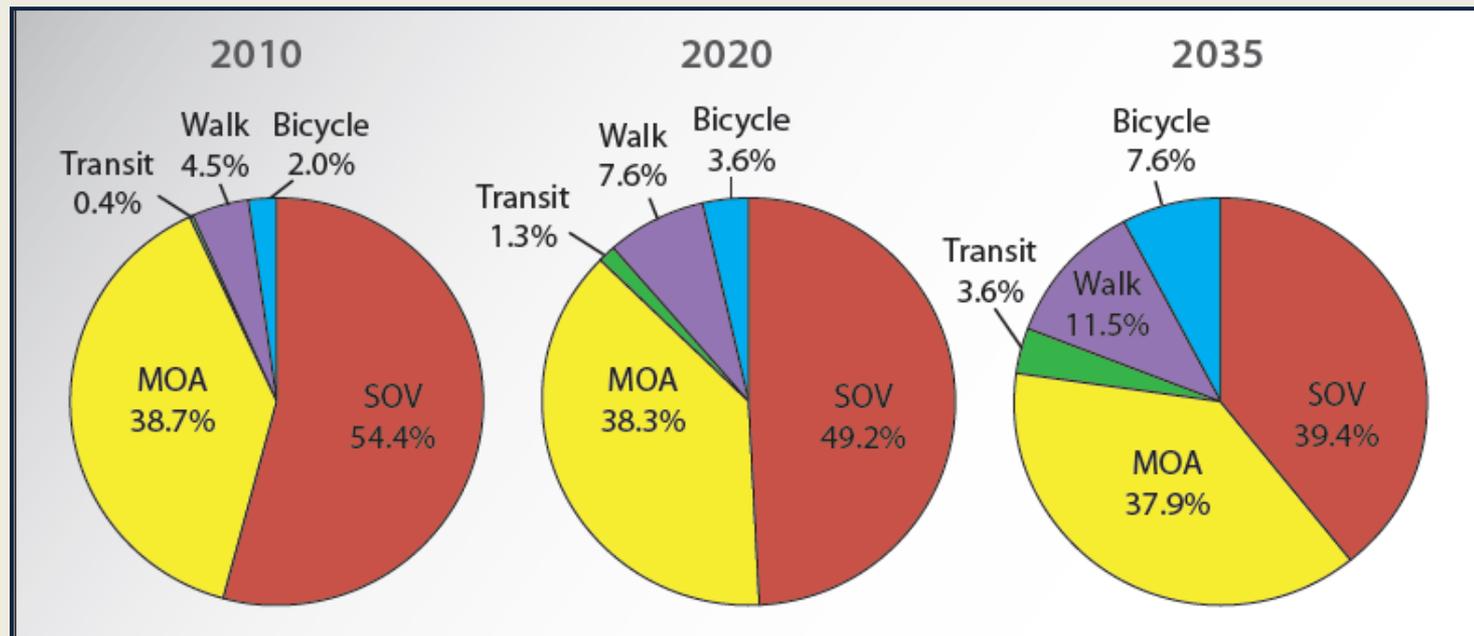
# shared parking

residential + office



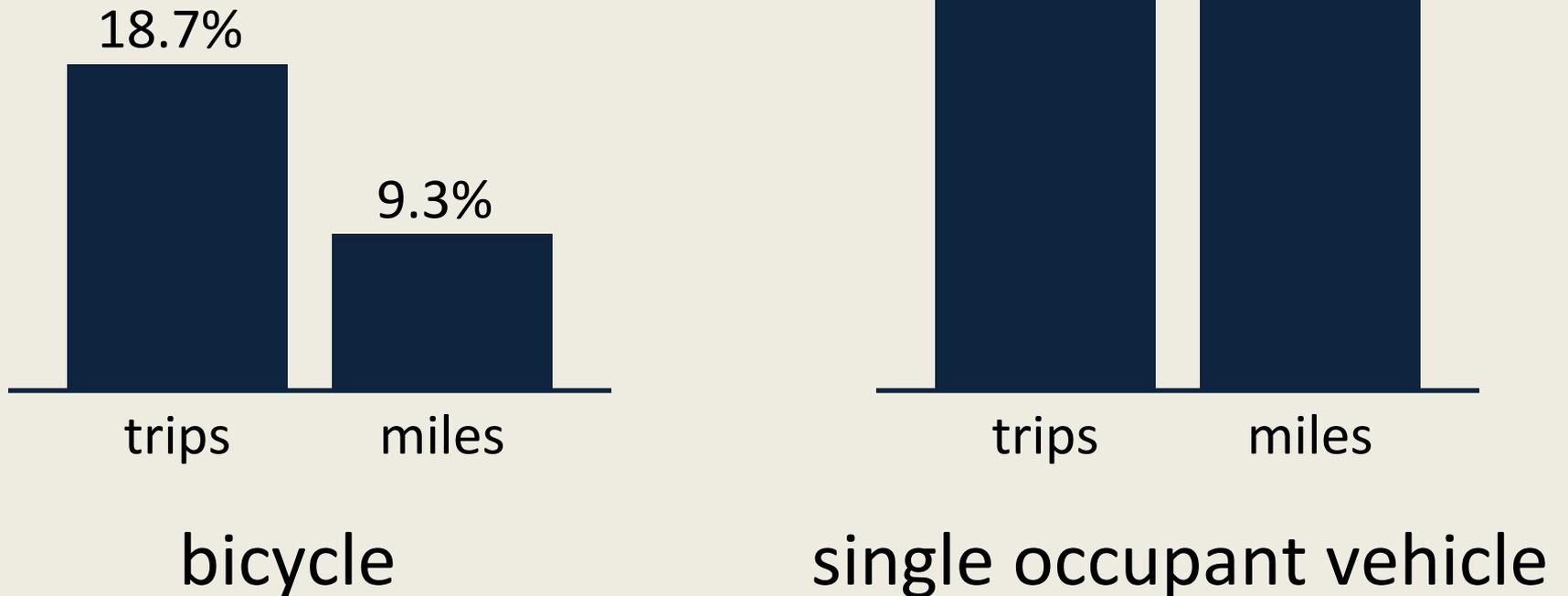
# mode share

- ✓ expensive
- ✓ technological
- ✓ other benefits

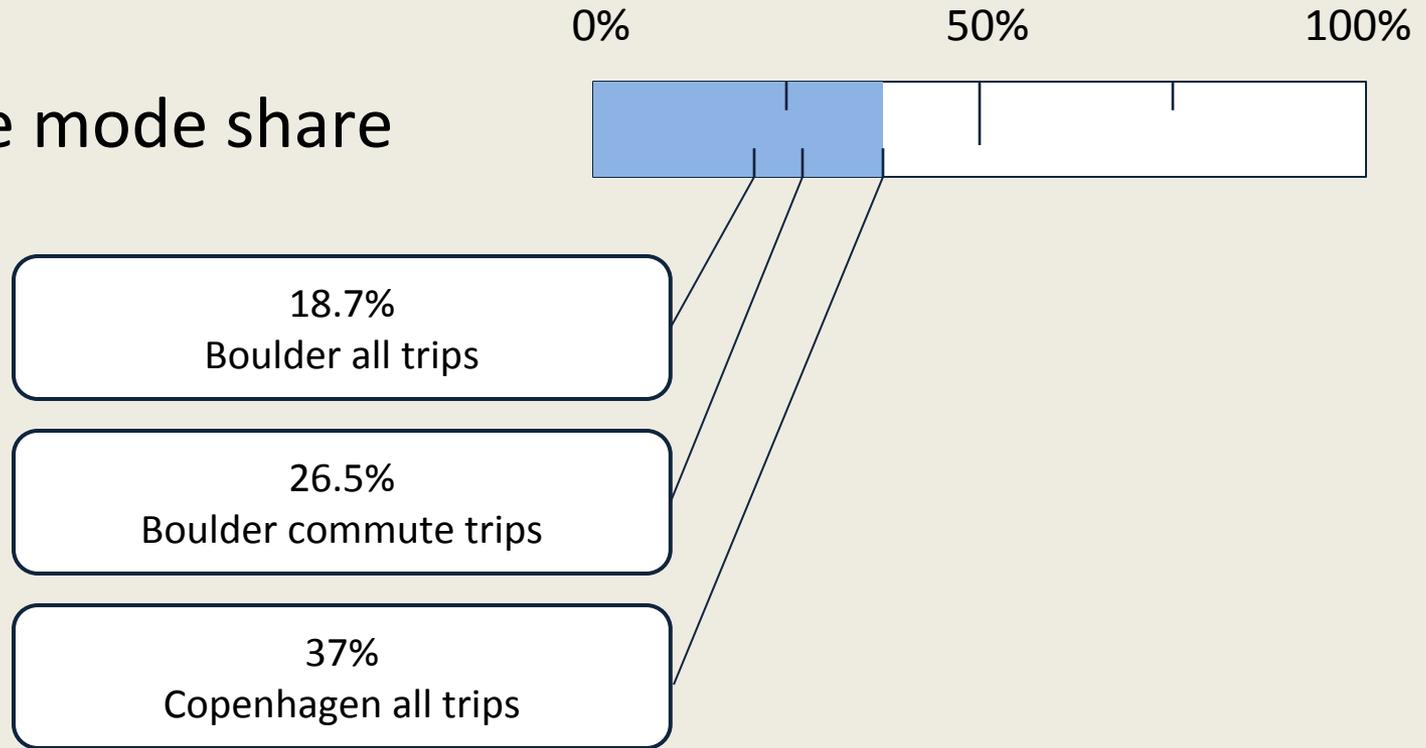


# trips vs. miles

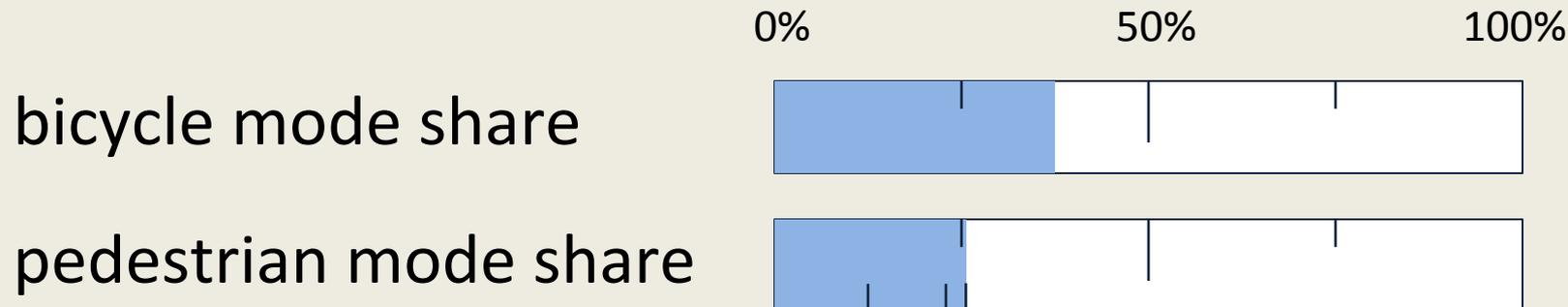
(Boulder resident data)



# bicycle mode share



reasonable mode share ranges  
(trip mode share)

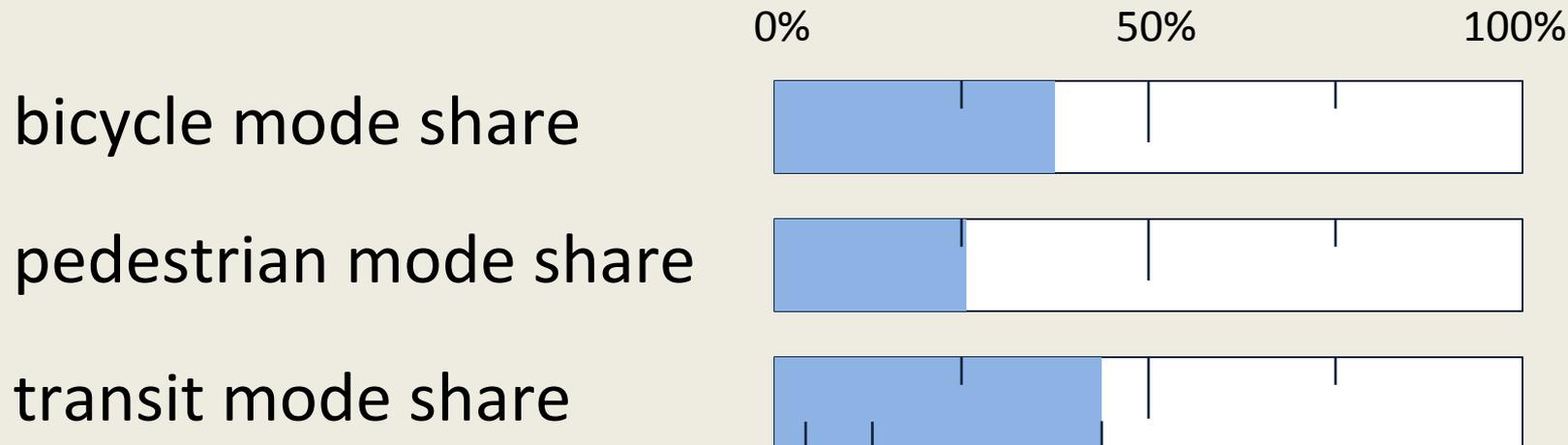


9.3%  
Boulder commute trips

20.3%  
Boulder all trips

25.8%  
Cambridge MA commute trips

reasonable mode share ranges  
(trip mode share)

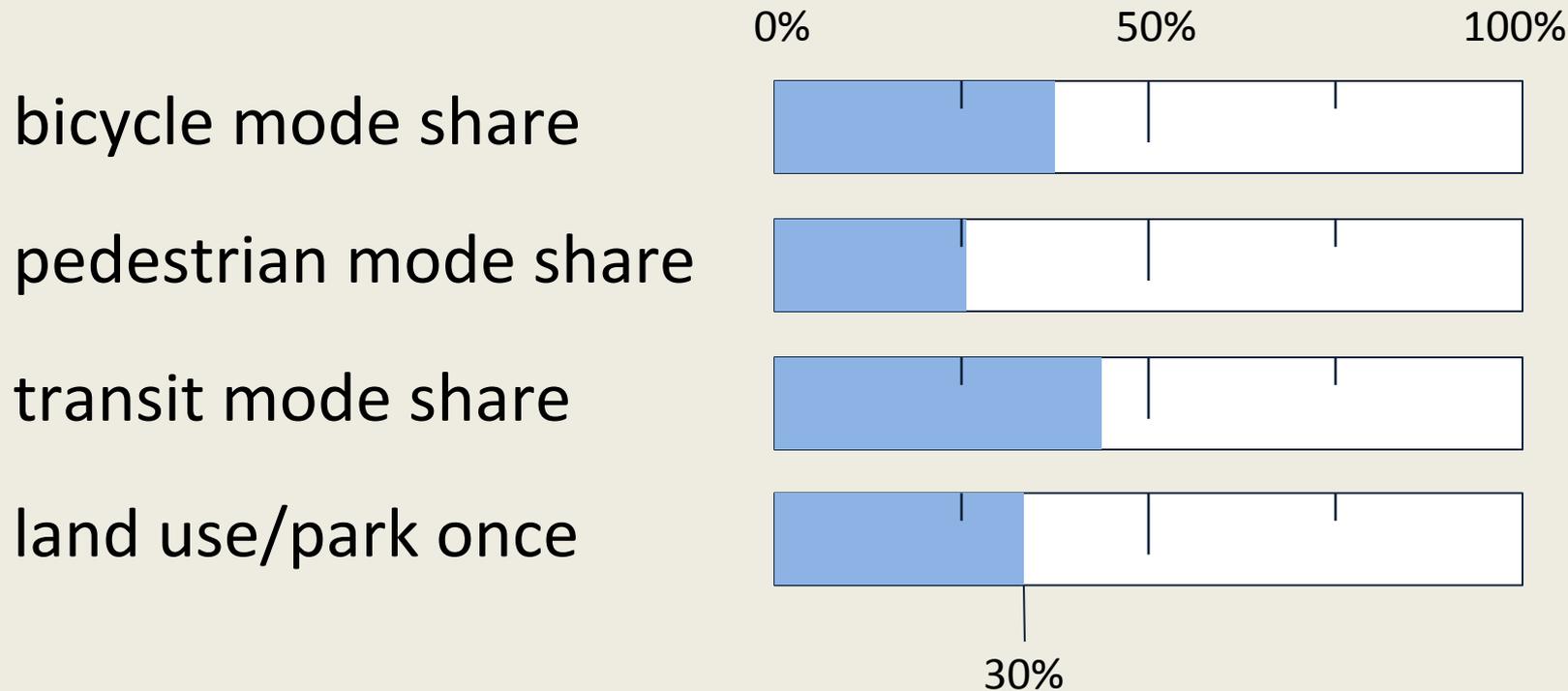


4.9%  
Boulder all trips

10.1%  
Boulder commute trips

44.4%  
Downtown Denver commute trips

reasonable mode share ranges  
(trip mode share)

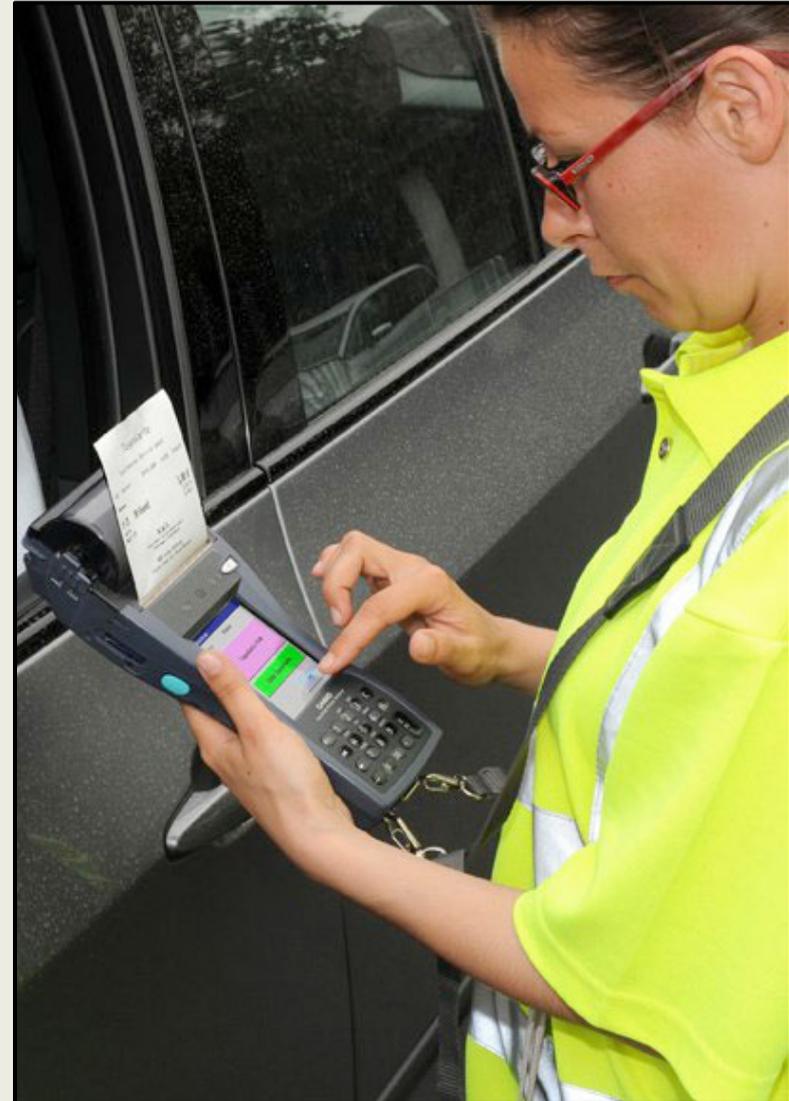


*combined total reduction in demand: > 50%*

reasonable mode share ranges  
(trip mode share)

# enforcement

- ✓ friendly but inevitable
- ✓ use technology



# pricing

- ✓ fundamentally necessary
- ✓ use technology



# integrated approach

*land use*

land use inventory

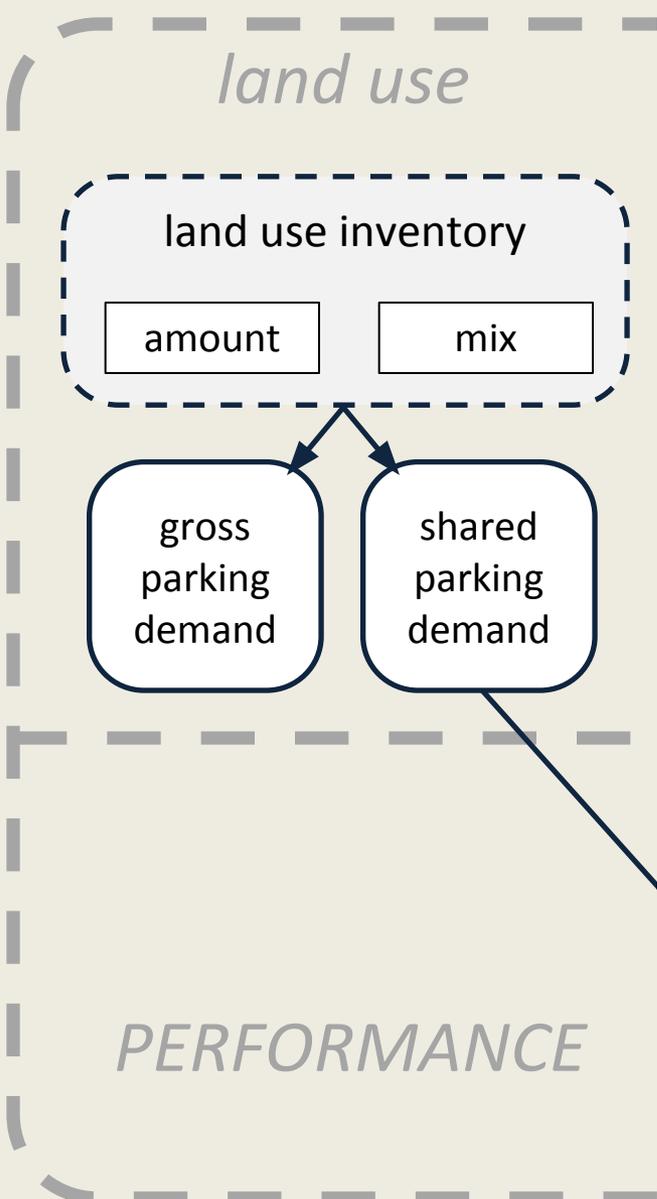
amount

mix

gross  
parking  
demand

shared  
parking  
demand

*PERFORMANCE*



# integrated approach

*land use*

*parking management*

land use inventory

amount

mix

management program

add parking supply

shift mode share

parking pricing

enforcement

gross  
parking  
demand

shared  
parking  
demand

*PERFORMANCE*

net demand

*\$ cost*

*peak  
ratio  
85%*

# integrated approach

*land use*

*parking management*

*supply*

land use inventory

amount

mix

management program

add parking supply

shift mode share

parking pricing

enforcement

base parking supply

new parking supply

total parking supply

gross parking demand

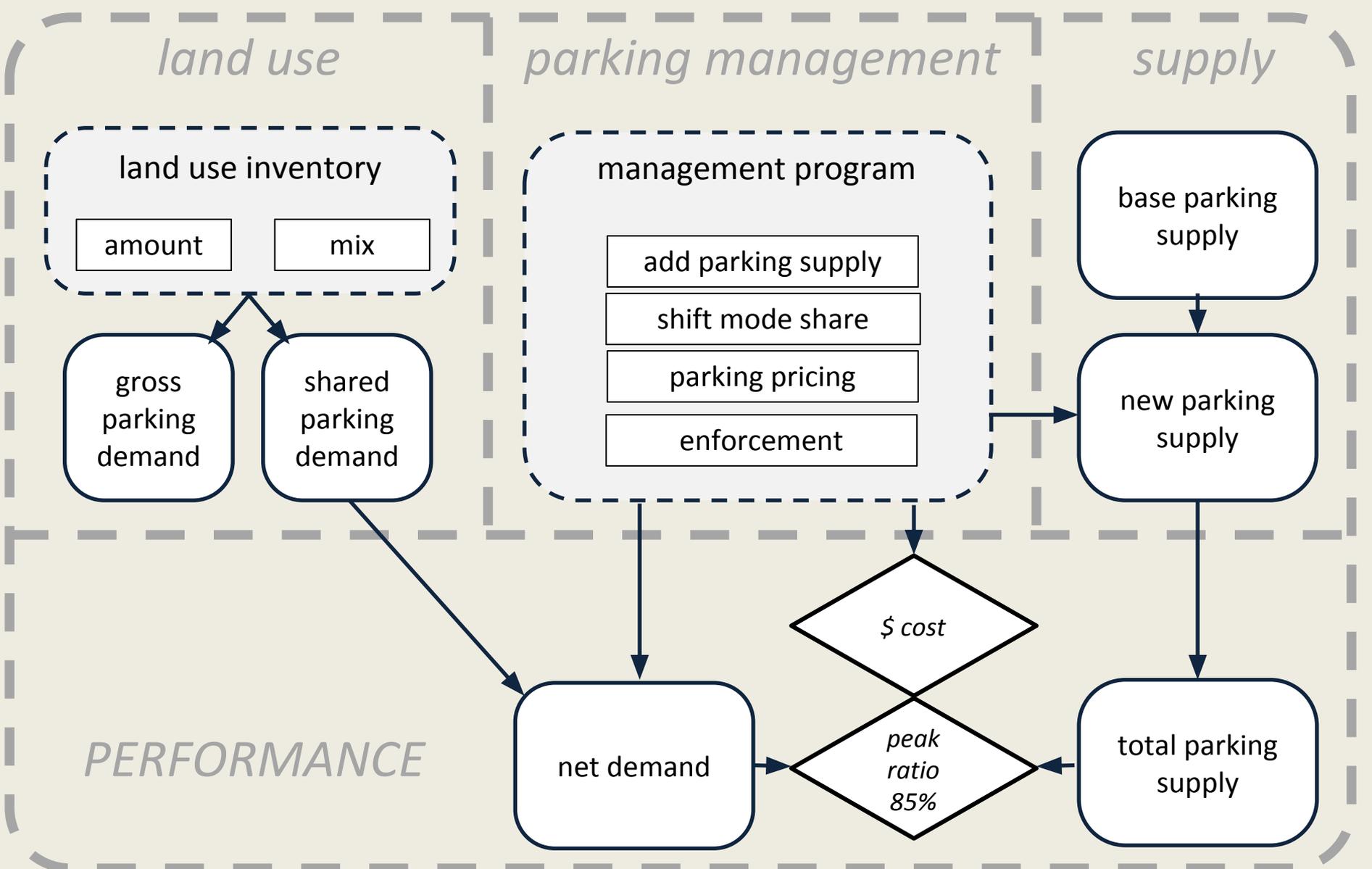
shared parking demand

*PERFORMANCE*

net demand

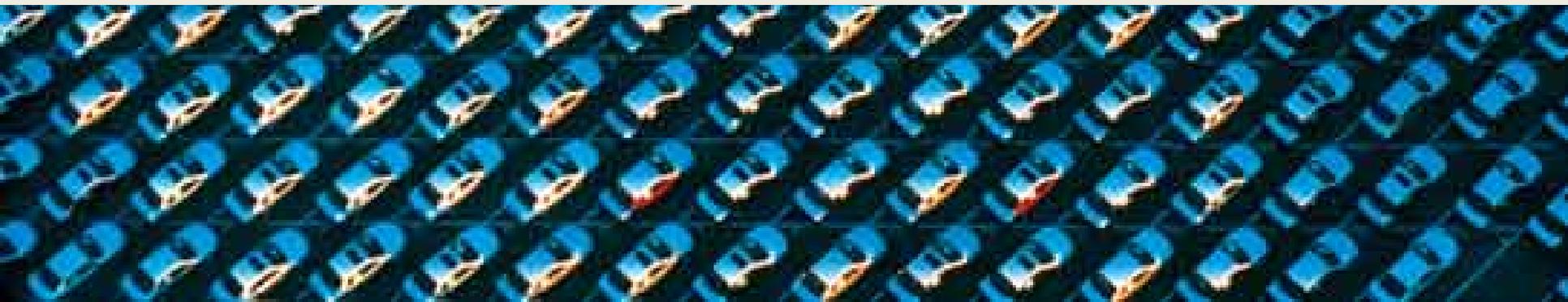
*\$ cost*

*peak ratio 85%*





wrap up



benefits of good access



cost to build & maintain

land opportunity cost

balanced, strategic approach

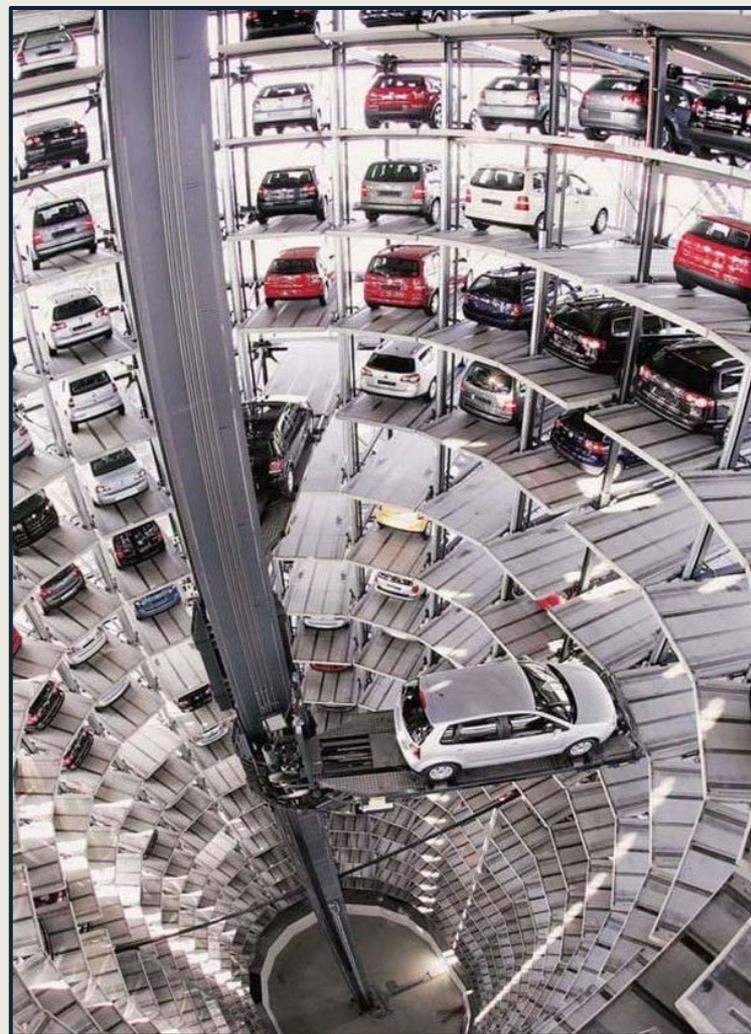
# tonight

1. mobility trends

2. parking challenges

3. parking management

next: City of Columbia,  
Current Parking Challenges &  
Parking Audit Results

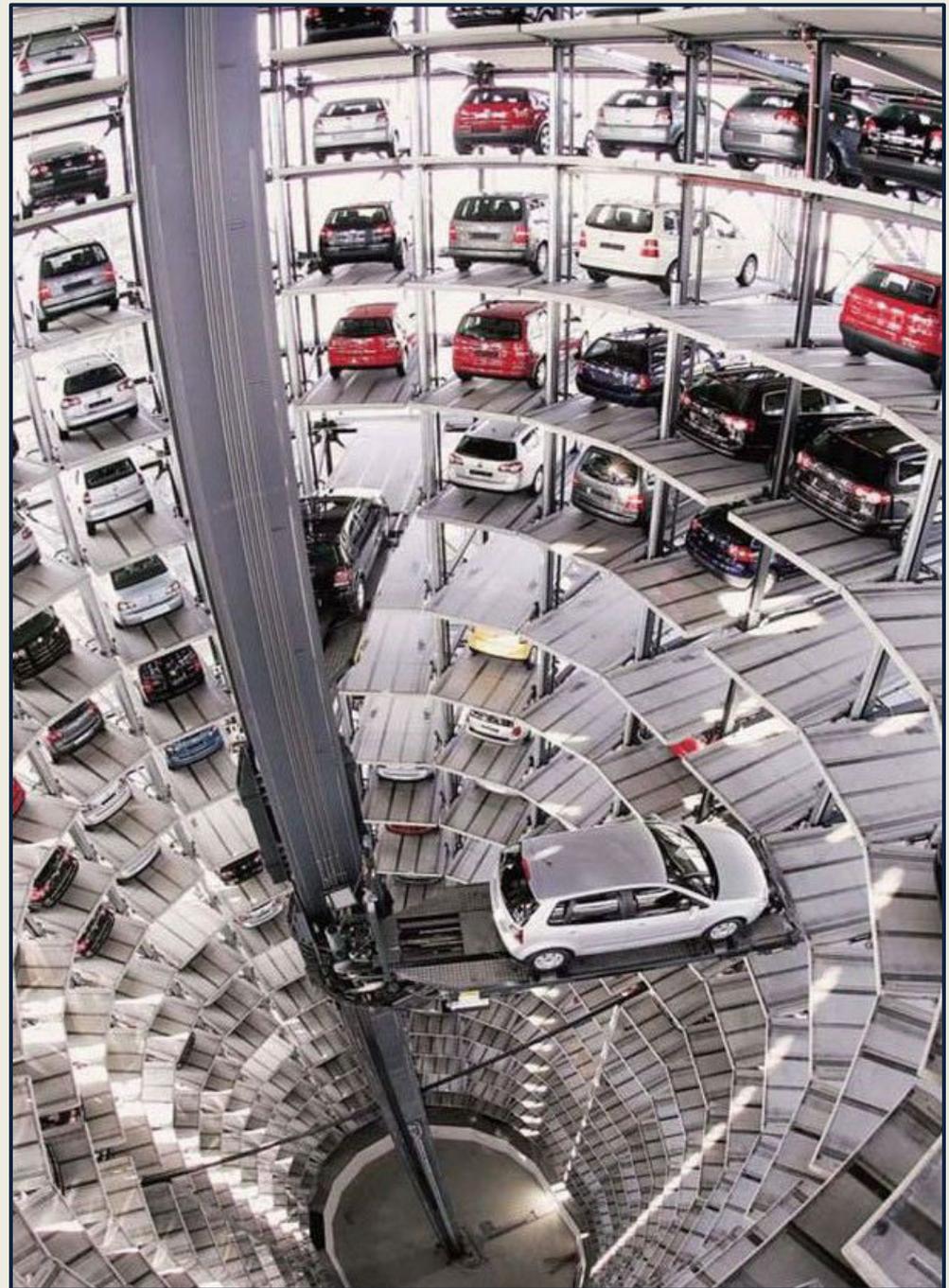


# tomorrow

1. basics

2. strategies

3. metrics





questions

