

TRANSPORTATION DEMAND MANAGEMENT AND THE ECONOMICS OF PARKING PRICING

Adam Millard-Ball
Environmental Studies Department
UC Santa Cruz

KEY POINTS



Prices



Costs



**The
future?**

KEY POINTS



Prices

IMPACT OF A 10% INCREASE IN PARKING CHARGES



Seattle: ↓ 2.7%



Portland: ↓ 2.7%



Aspen: ↓ 2.9%

Typical range: 1-3%

IMPACT OF A 10% INCREASE IN PARKING CHARGES



Santa Cruz: ???

PARKING PRICE RESEARCH

- Elasticities “generally range from -0.1 to -0.6, with -0.3 being the most frequently cited value”
(Transportation Research Board Study, 2005)
- Elasticities range from -0.18 to -0.63
(Lehner & Peer 2019, meta-analysis of 50 studies)
- What makes parking demand more responsive to price?
 - Better substitutes (e.g. transit, JUMP bikes)
 - Enforcing state “cash out law”
 - Removing deep discounts for monthly permits

PARKING PRICE RESEARCH

- Elasticities “generally range from -0.1 to -0.6, with -0.3 being the most frequently cited value”
(Transportation Research Board Study, 2005)
- Elasticities range from -0.18 to -0.63
(Lehner & Peer 2019, meta-analysis of 50 studies)
- What makes parking demand more responsive to price?
 - Better substitutes (e.g. transit, JUMP bikes)
 - Enforcing state “cash out law”
 - Removing deep discounts for monthly permits

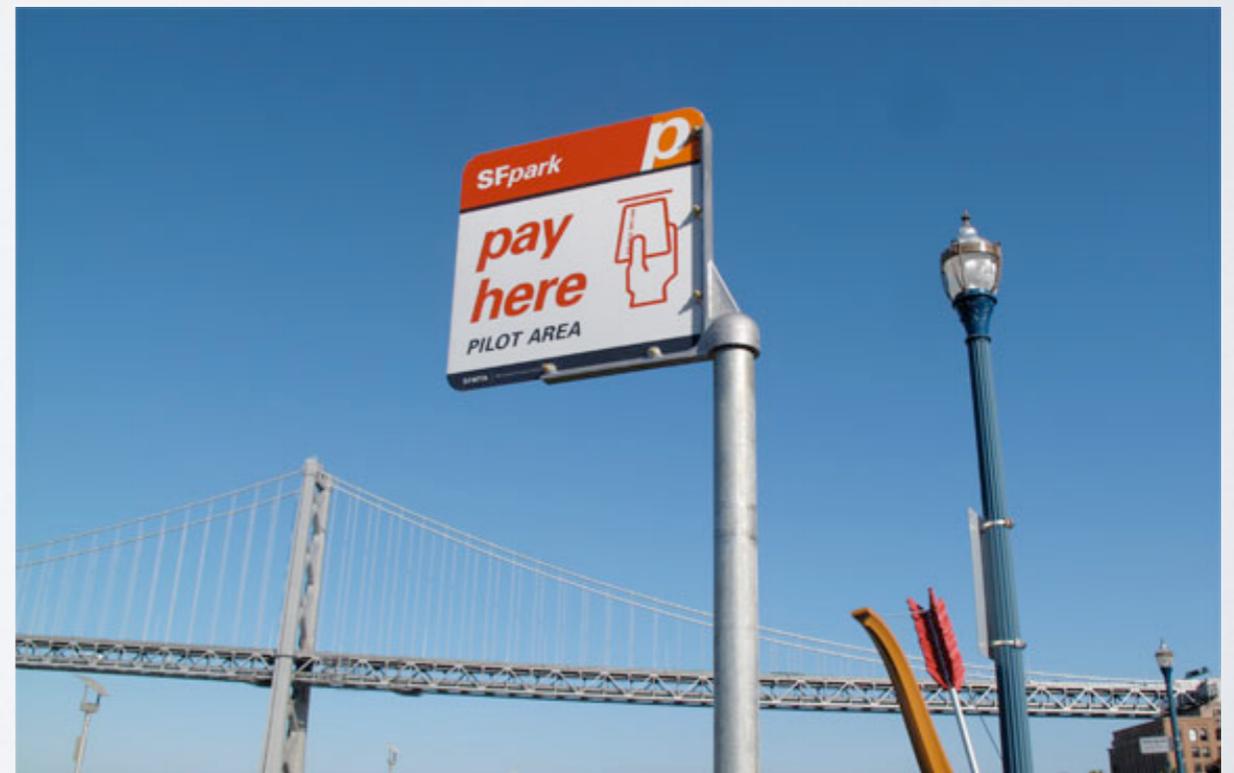
Downtown Santa Cruz parking prices

Monthly	\$45
Daily	\$176
Discount	74%

Assumes 22 weekdays / month

THE SFPARK EXPERIMENT

- Target: bring on-street parking occupancy into 60-80% target range
- Wider goals
 - Reduced cruising -> air pollution and congestion
 - Support vitality of neighborhood businesses

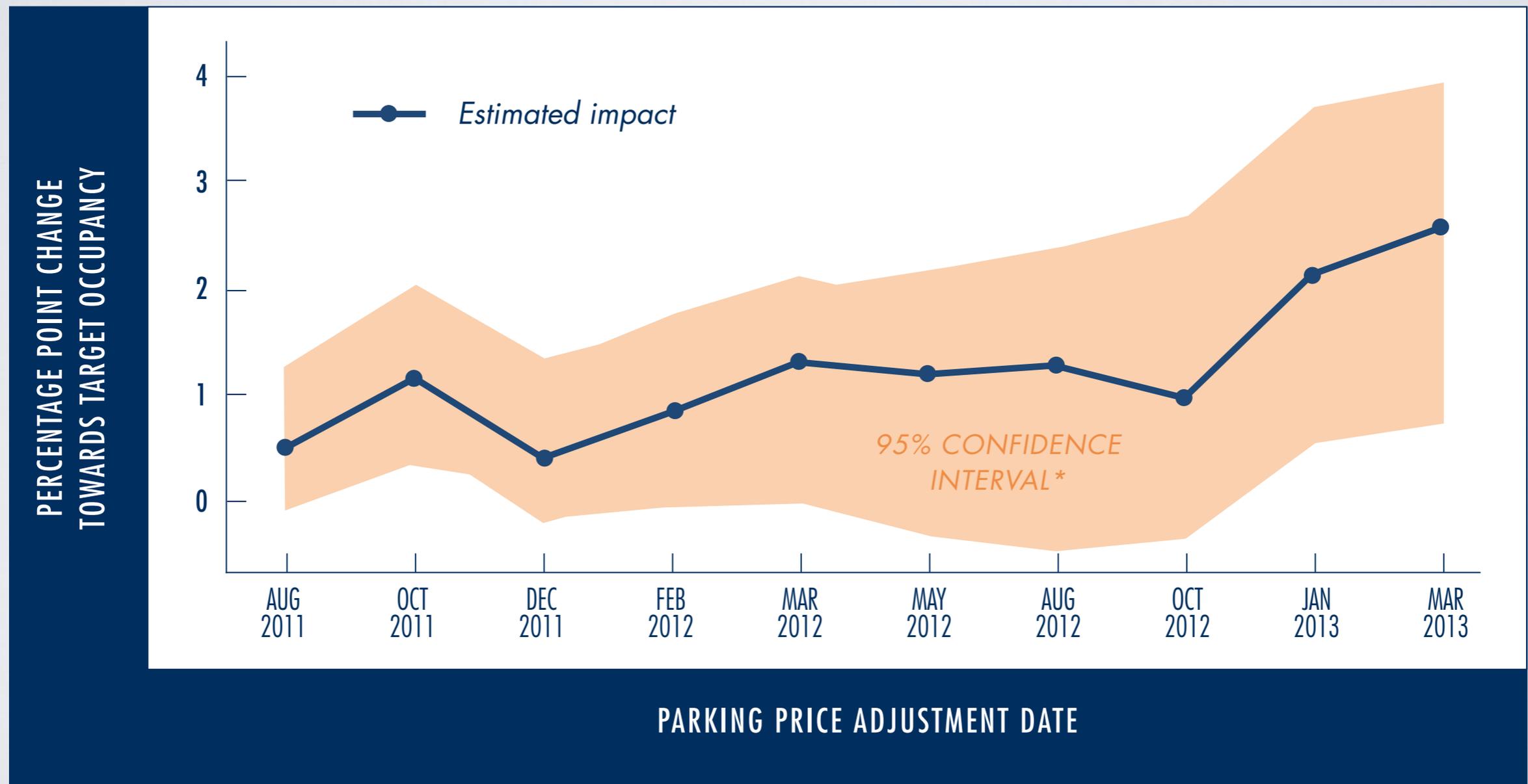


KEY ELEMENTS

- Rates adjusted every 2 months by block and timeband
 - <30% occupancy: ↓ 50¢
 - <60% occupancy: ↓ 25¢
 - ≥80% occupancy: ↑ 25¢
- Other components: smart meters, real-time information, more payment options, garage pricing



IMPACTS SMALL TO START WITH, GROW AFTER 2 YEARS...



Sample: 311 blocks with sensor data; metered hours. *Combined confidence interval for three alternative models.

KEY POINTS



Costs

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost

~\$35 million

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514
Capital cost per space	~\$68,000

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514
Capital cost per space	~\$68,000
... per year (30 years @ 4%)	~\$3,900

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514
Capital cost per space	~\$68,000
... per year (30 years @ 4%)	~\$3,900
... per day (255 per year)	~\$15

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514
Capital cost per space	~\$68,000
... per year (30 years @ 4%)	~\$3,900
... per day (255 per year)	~\$15
Operating costs (@ 25%)	\$3

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514
Capital cost per space	~\$68,000
... per year (30 years @ 4%)	~\$3,900
... per day (255 per year)	~\$15
Operating costs (@ 25%)	\$3
Total costs per weekday	~\$18

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514
Capital cost per space	~\$68,000
... per year (30 years @ 4%)	~\$3,900
... per day (255 per year)	~\$15
Operating costs (@ 25%)	\$3
Total costs per weekday	~\$18
Permit price (after 5-yr rate increase)	\$3.40

MARGINAL COST OF A SPACE

Example: Planned library garage

Capital cost	~\$35 million
Number of spaces	640
Number of NEW spaces	514
Capital cost per space	~\$68,000
... per year (30 years @ 4%)	~\$3,900
... per day (255 per year)	~\$15
Operating costs (@ 25%)	\$3
Total costs per weekday	~\$18
Permit price (after 5-yr rate increase)	\$3.40
Daily subsidy	\$14.60

FUNDING SOURCES

- Meter revenue and other funds would subsidize permits holders in any new garage
- Other uses for this revenue:
 - TDM (cheaper to pay people not to drive)
 - Affordable housing
 - ...any other budget priority
- Principle: subsidize what you want more of

Four approaches



Less parking, cheaper housing

FUNDING SOURCES

- Meter revenue and other funds would subsidize permits holders in any new garage
- Other uses for this revenue:
 - TDM (cheaper to pay people not to drive)
 - Affordable housing
 - ...any other budget priority
- Principle: subsidize what you want more of

Four approaches

Require on-site parking



Less parking, cheaper housing

FUNDING SOURCES

- Meter revenue and other funds would subsidize permits holders in any new garage
- Other uses for this revenue:
 - TDM (cheaper to pay people not to drive)
 - Affordable housing
 - ...any other budget priority
- Principle: subsidize what you want more of

Four approaches

Require on-site parking

Require parking but subsidize it off-site



Less parking, cheaper housing

FUNDING SOURCES

- Meter revenue and other funds would subsidize permits holders in any new garage
- Other uses for this revenue:
 - TDM (cheaper to pay people not to drive)
 - Affordable housing
 - ...any other budget priority
- Principle: subsidize what you want more of

Four approaches

Require on-site parking

Require parking but subsidize it off-site

Don't require parking, subsidize the housing

Less parking, cheaper housing

FUNDING SOURCES

- Meter revenue and other funds would subsidize permits holders in any new garage
- Other uses for this revenue:
 - TDM (cheaper to pay people not to drive)
 - Affordable housing
 - ...any other budget priority
- Principle: subsidize what you want more of

Four approaches

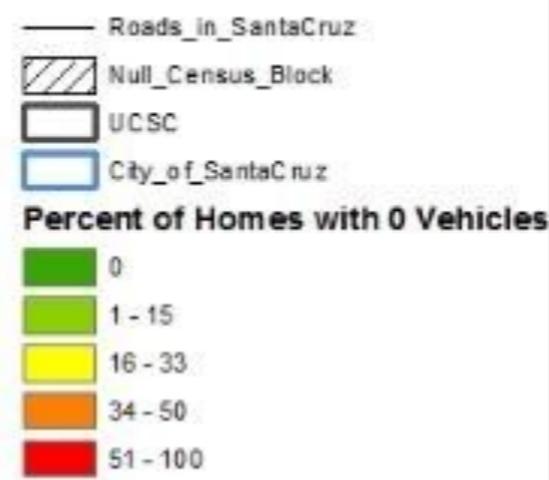
Require on-site parking
Require parking but subsidize it off-site
Don't require parking, subsidize the housing
Cap the parking, subsidize the housing

Less parking, cheaper housing

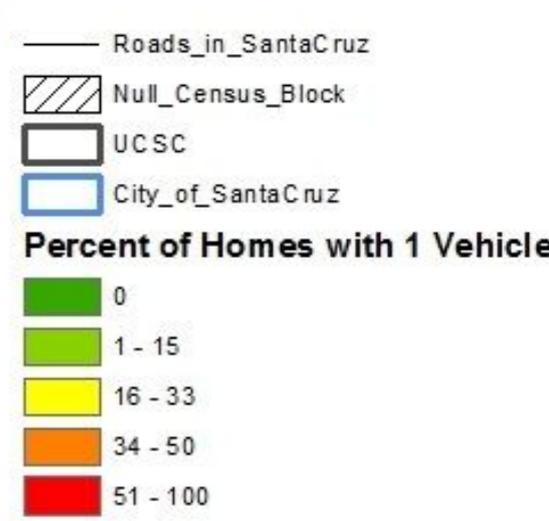
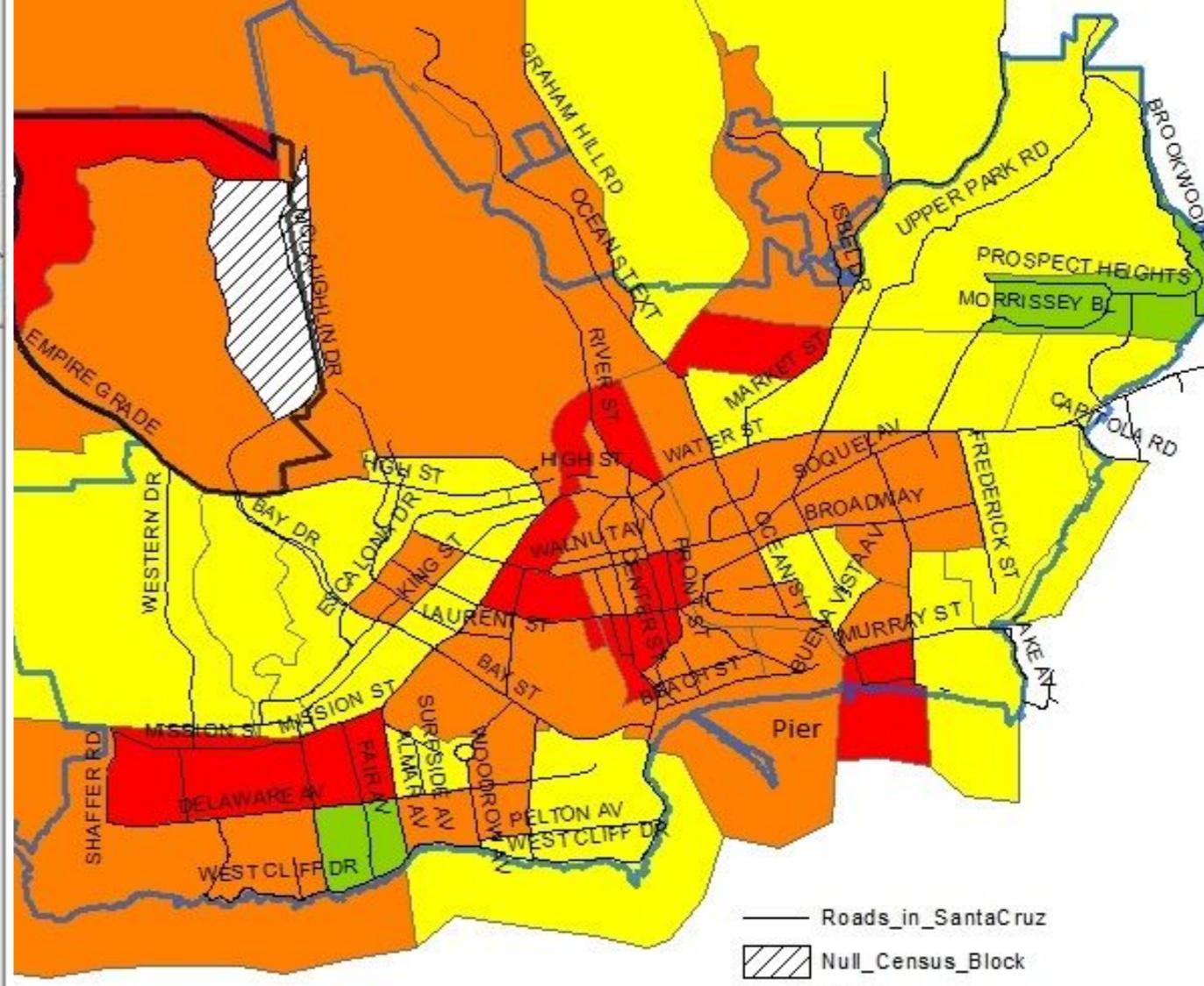
MANY RESIDENTS DON'T OWN A CAR

	No car	One car	Two+ cars
Santa Cruz City	8.4%	35.5%	56.1%
<i>Renters</i>	13.6%	41.6%	44.8%
Owners	1.7%	27.8%	70.5%

Percent of Total Homes with Access to 0 Vehicles

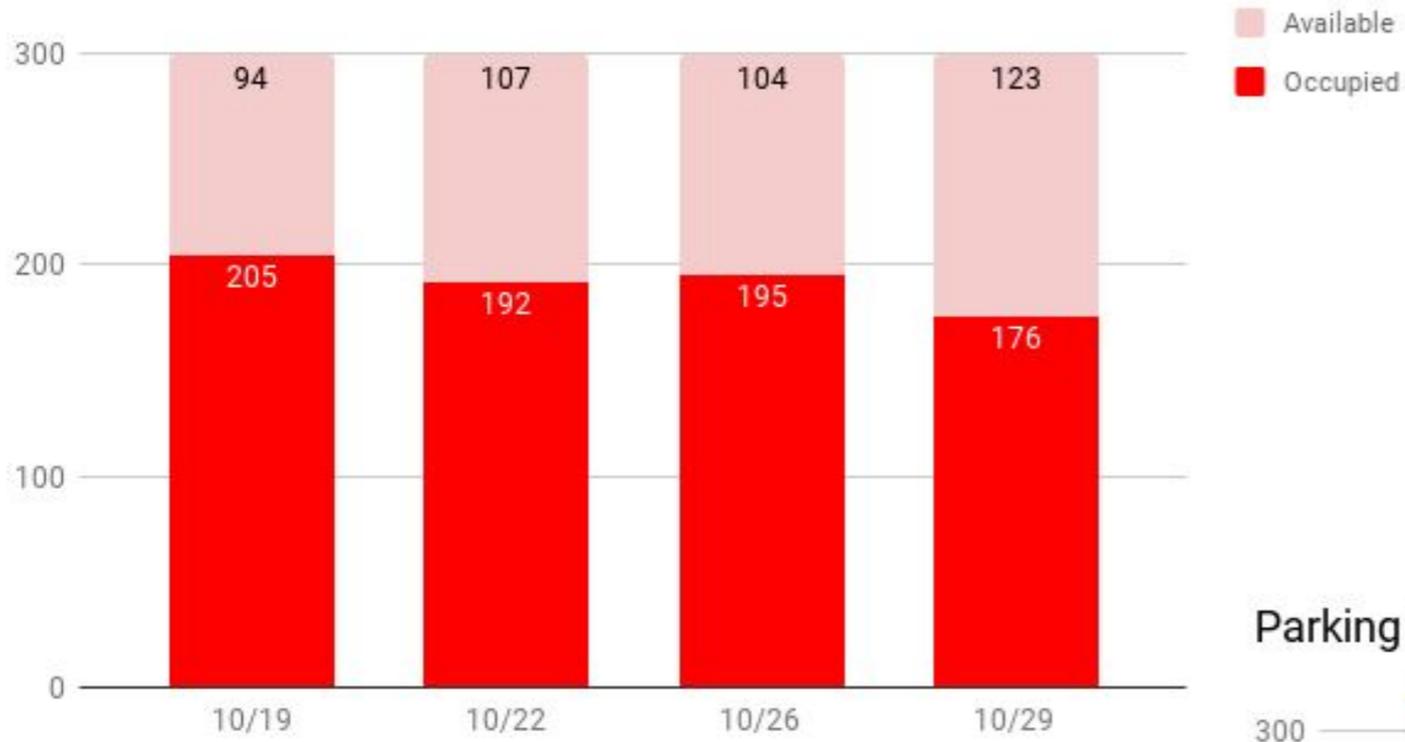


Percent of Total Homes with Access to 1 Vehicle



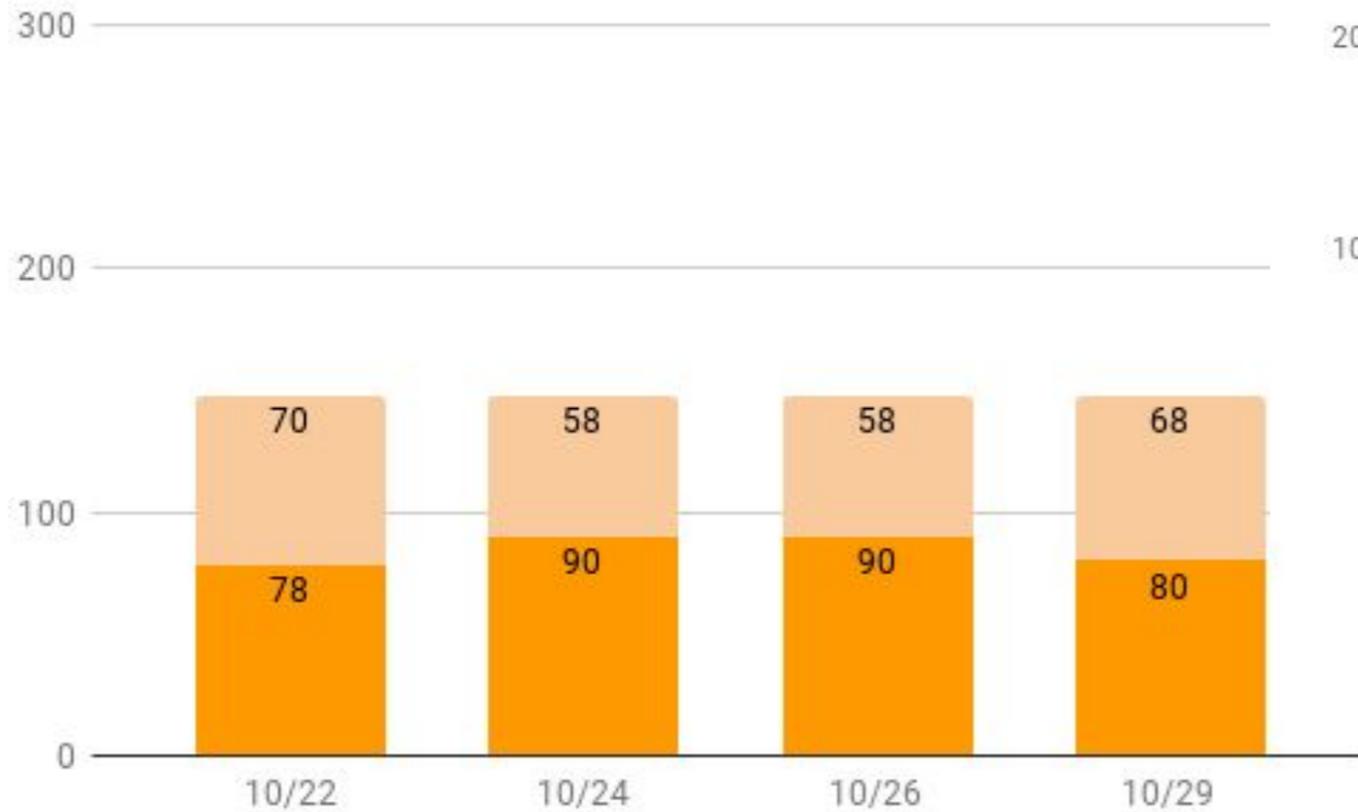
Maps: Alex Garber and Rylee Hawkins
 Source: American Community Survey

Parking Spots at Pacific Shores

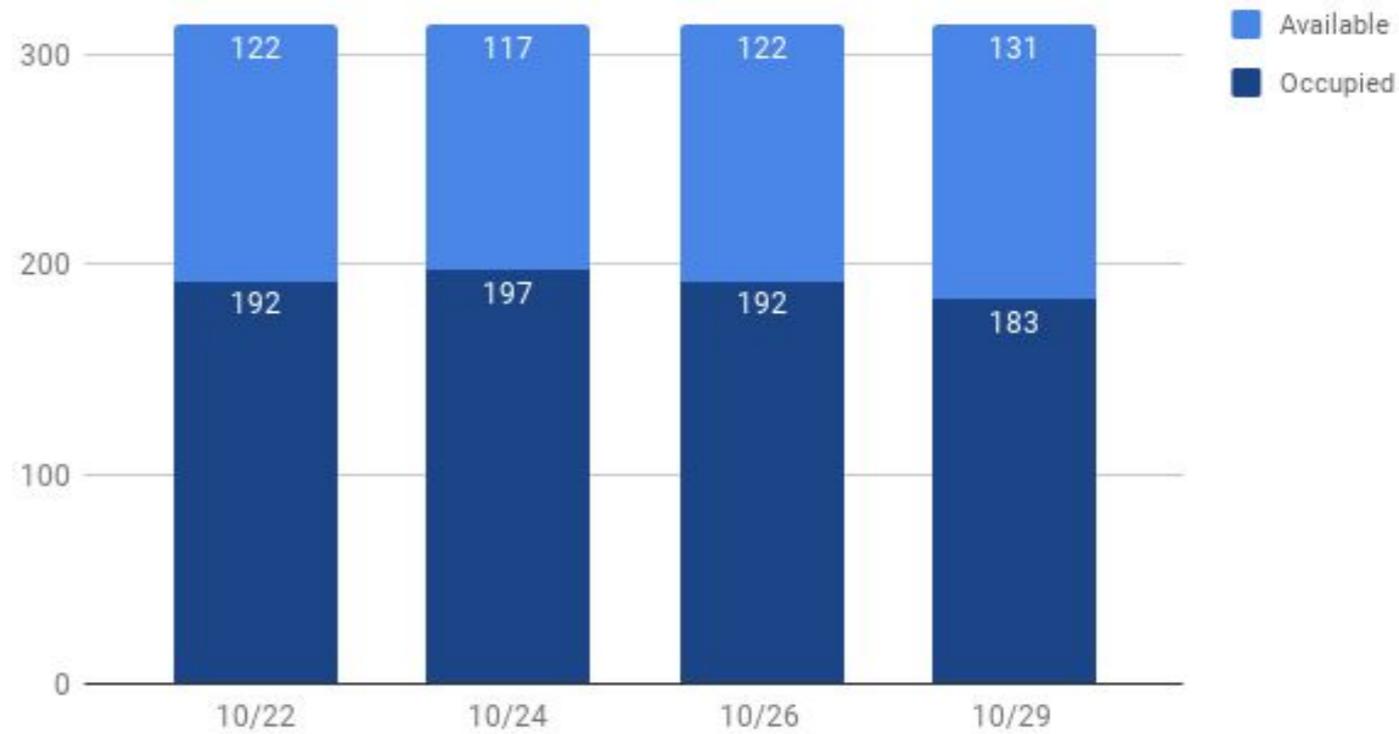


MUCH PARKING
GOES TO
WASTE

Parking Spots at Chestnut Townhomes



Parking Spots at Cypress Point

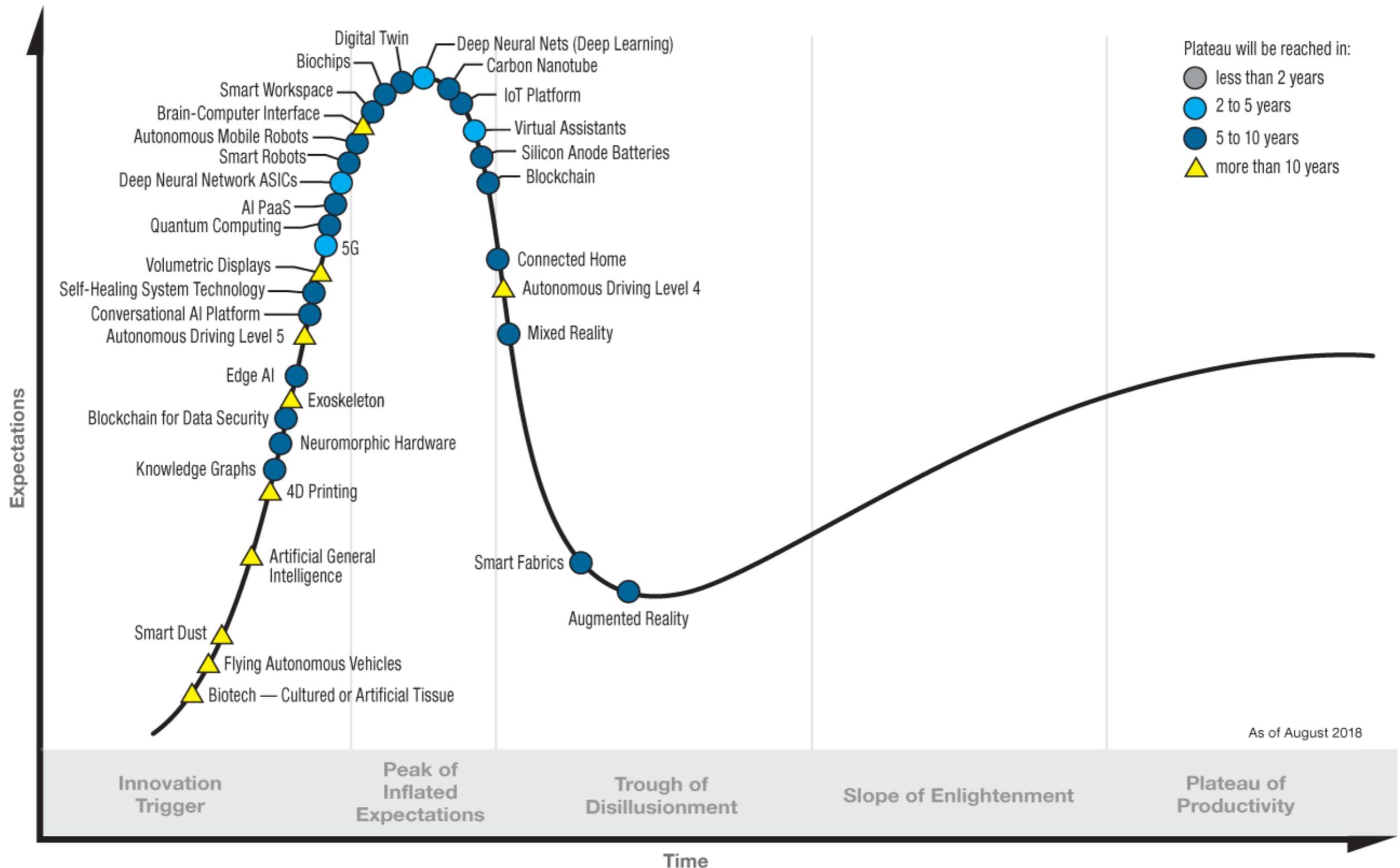


KEY POINTS

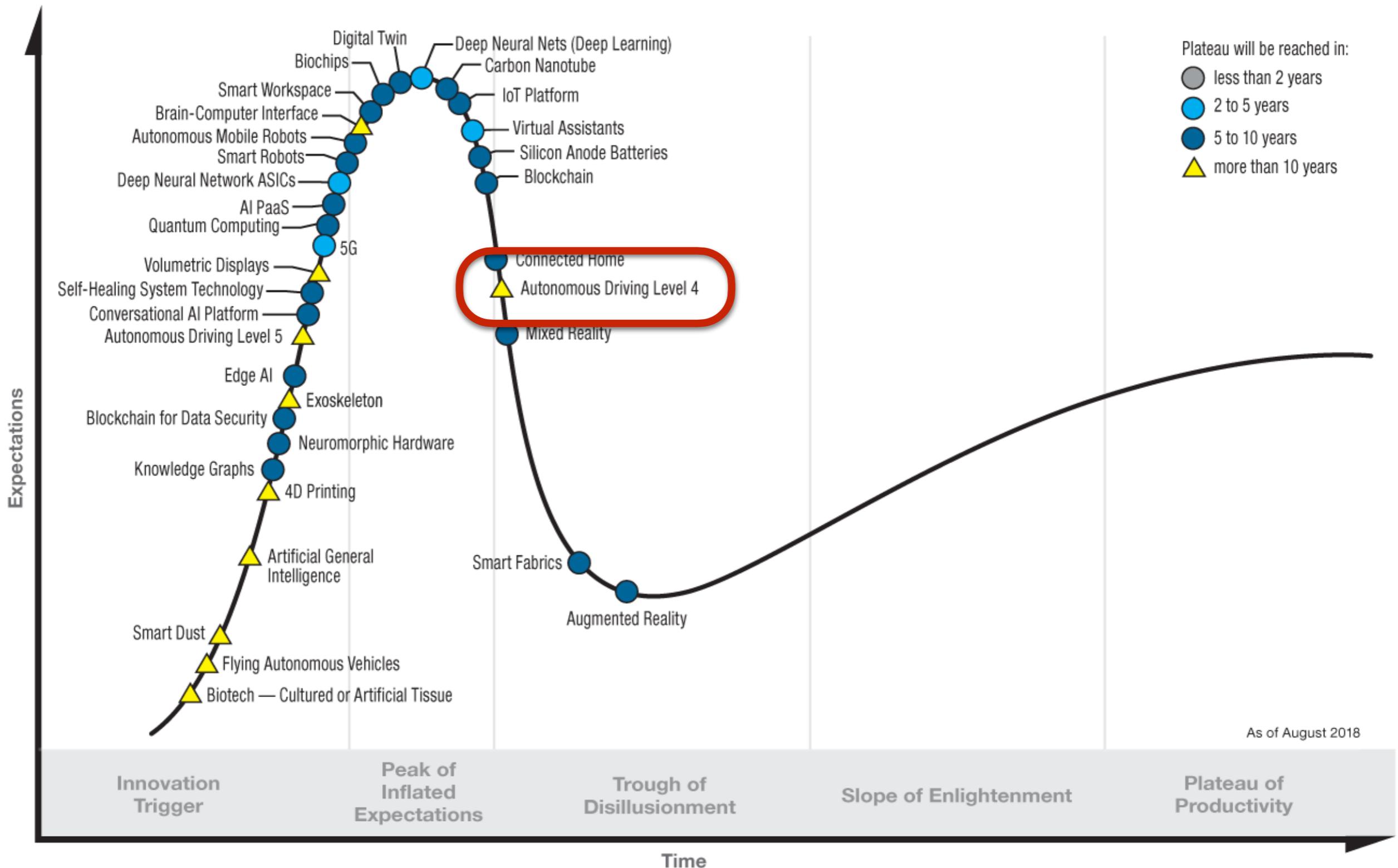


**The
future?**

Hype Cycle for Emerging Technologies, 2018



Hype Cycle for Emerging Technologies, 2018



FINANCE

How Driverless Cars Could Be a Big Problem for Cities

The technology could signal the beginning of the end of parking tickets and other revenue sources. Some cities' budgets could take a big hit.

BY MIKE MACIAG | AUGUST 2017

The Economist

Not 'appy

Airports have been hit by the rise of Uber and Lyft

They are looking at ways to make up falling revenues from car parking and car rentals

It's time for a "big short" in parking

By Joe Cortright | 22.3.2016



Last year's hit film *The Big Short* depicted various investors who, realizing that there was a housing bubble in the years before the 2000s crash, found ways to "short" housing, betting against the market and ultimately making a killing when the crisis hit. Looking forward, there's a plausible case to be made that this might be the time for a "Big Short" in parking, as a confluence of the growing popularity of walkable neighborhoods and the arrival of self-driving cars may make our current levels of parking way over-supplied compared to demand in the near future.



UBER/LYFT TODAY, AUTONOMOUS SOON?

POTENTIAL DATA NEEDS

- Overnight parking occupancy
- One-year impact of price increases
- Development pro formas with different levels of parking and inclusionary housing
- UCSC students can help!

POTENTIAL DATA NEEDS

- Overnight parking occupancy
- One-year impact of price increases
- Development pro formas with different levels of parking and inclusionary housing
- UCSC students can help!

Thank you!

Adam Millard-Ball

Environmental Studies
University of California,
Santa Cruz

adammb@ucsc.edu
people.ucsc.edu/~adammb/