

Dynamic Parking Pricing: Experiences in California

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Transport, Energy Efficiency and Behaviour

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Parking Pricing Policies

Applications

- Commuter
- Non-commuter
- Residential parking

Objectives

- Financial - Revenue for operators
- Social - Maintain residential quality of life
- Economic - Support commercial success
- Environmental - Decrease vehicular emissions by **managing travel demand**, reducing congestion and travel time



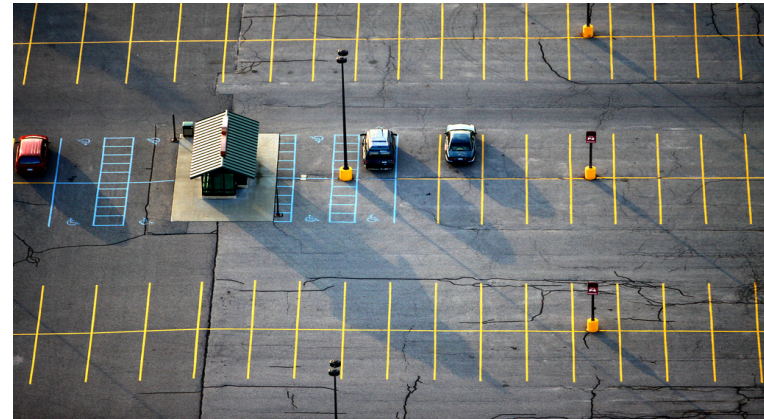
Importance of Parking Pricing

- Parking pricing can be a highly effective transportation demand management tool, reducing negative externalities and allocating resources efficiently
- Yet parking services are often offered at a subsidized fixed rate, which neither reflects the true cost of parking nor actual parking demand

The High Cost of Parking

Construction costs are affected by

- Size per space
- Size and shape of site
- Number of levels
- Topography
- Design
- Geographic location



Images by SPUR



Current Studies on Parking Pricing

Increasing parking pricing decreases parking demand

- A 10% increase in parking price will decrease demand by 3% (Kulash, 1974; Gillen, 1997; Kelly and Clinch, 2009)
- When alternative spaces are available, 10% increase in price will decrease parking demand by 10% (Hensher and King, 2001)
- Parking pricing reduces congestion (Jansson, 2010; Shoup, 2005)

Removing parking subsidies decreases solo driving trips

- When employer charges for parking or offers cash alternatives, solo car trips decrease, while carpooling, transit, and NMT increase (Shoup, 1997)
- When on-street parking stopped being free and transit discounts were offered, transit ridership increased (Bianco, 2000)

The City of San Francisco



The Concept of Dynamic Parking Pricing

Before SFpark



Block A — Central Business District Location — 0 Open Spots



Block B — Nearby Location — 3 Open Spots

After SFpark



Block A — Central Business District Location — 1 Open Spot



Block B — Nearby Location — 2 Open Spots

Key Objectives:

- Reduce congestion
- Improve parking availability

SFpark Operational Goals

- To provide real-time parking information
- “Just right” meter prices that mitigate parking demand
- Easy-to-pay meters and extended time limits for added convenience



Parking Sensor



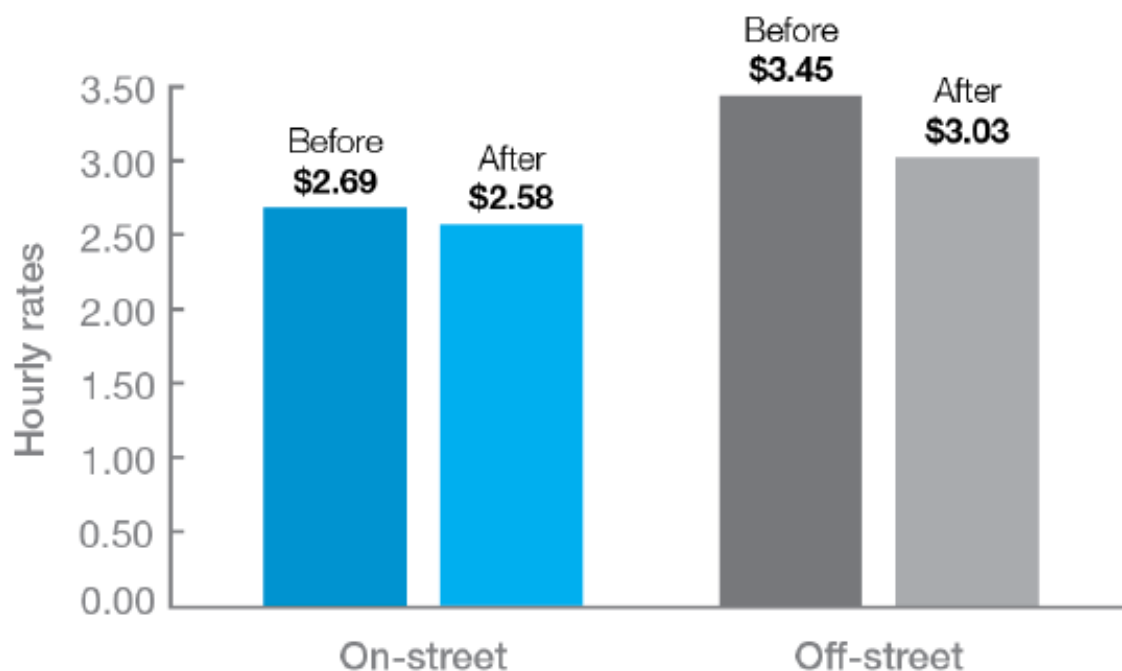
Images by SFMTA

Changes in Average Parking Rates

Hourly parking rates in SFpark areas

Before vs. after (10 rate changes)

On- and off-street rates



- Prices adjusted based on data collected
- On-street target occupancy of 60 – 80%
- Off-street target 40 – 80%

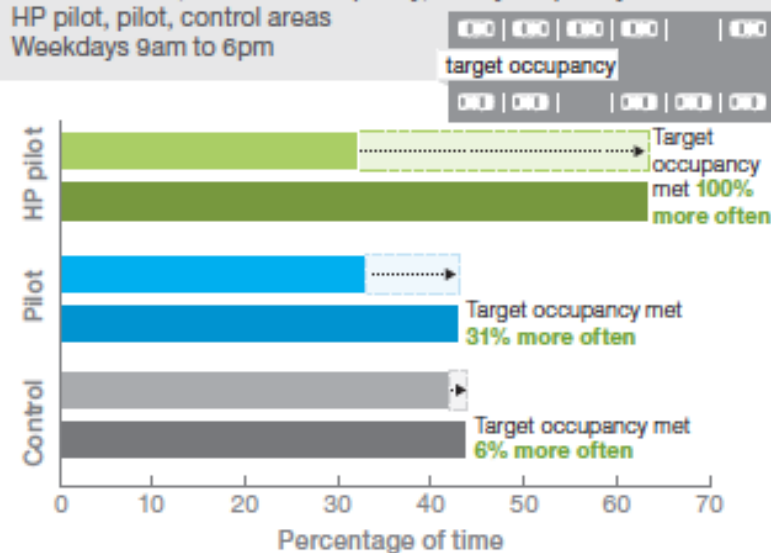
SFpark Project Results

How often do blocks meet target occupancy?

Before vs after, 60–80% occupancy, hourly frequency

HP pilot, pilot, control areas

Weekdays 9am to 6pm

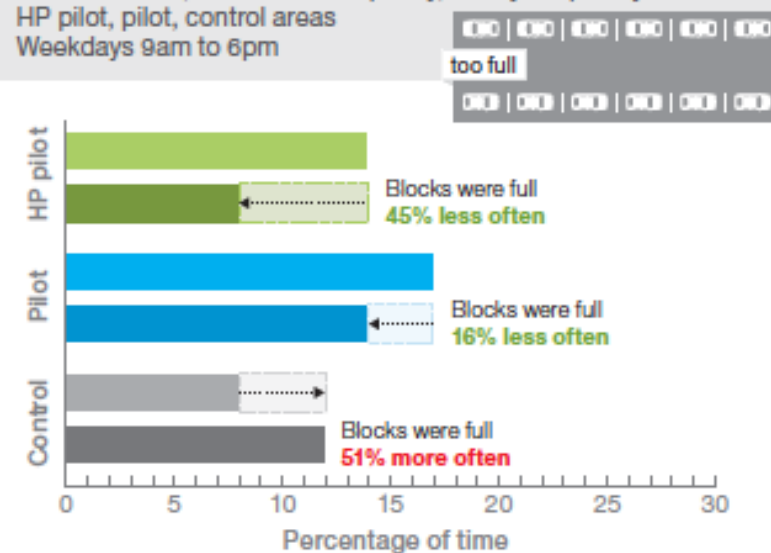


How often are blocks too full?

Before vs after, 90–100% occupancy, hourly frequency

HP pilot, pilot, control areas

Weekdays 9am to 6pm



Secondary Results

- Easier to pay and avoid citations (-23% fewer citations)
- Easier to find parking space (-43% in parking search time)
- Less cruising for parking
- Less vehicle miles travelled (-30% miles travelled)
- Decreased GHG emissions (-30% in daily GHG emissions)
- Decreased double parking (-22% per block)
- Improved transit speed (+2.3%)

Berkeley – goBerkeley Pilot Program

- City parking management and enforcement project
- Changes in parking time limits and costs, enforcement of resident permit parking
- Federal grant of \$2 million
- Covered 3 neighbourhoods
- 2012 - 2015



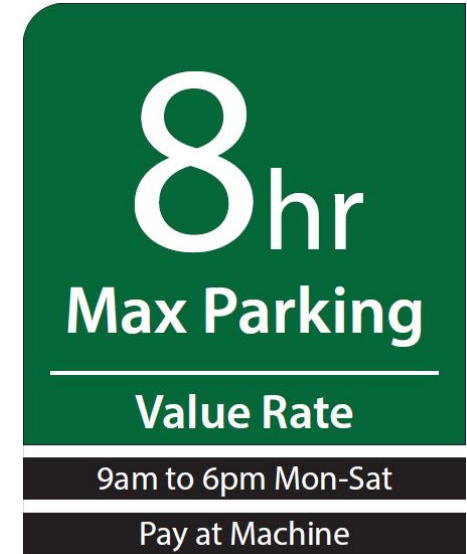
Images by City of Berkeley

Project Goals

- More transportation options
- Less traffic congestion
- Cleaner air
- Easier and more efficient parking
- Support economic vitality

Parking Rates and Time Limits

- Adjustments based on the average target occupancy of 65 – 85% per block
- Data collected through parking occupancy surveys and license plate images
- Parking rates range from \$1.50 to \$2.75 / hour



Images by the City of Berkeley

Financial Incentives

Financial incentives were offered in the pilot areas

- 1,000 free 6-month AC Transit “TravelChoice Berkeley” passes for residents
- 1,000 free 1-year AC Transit EasyPasses for employees
- Deeply discounted City CarShare fees (up to 90% off) for businesses and their employees

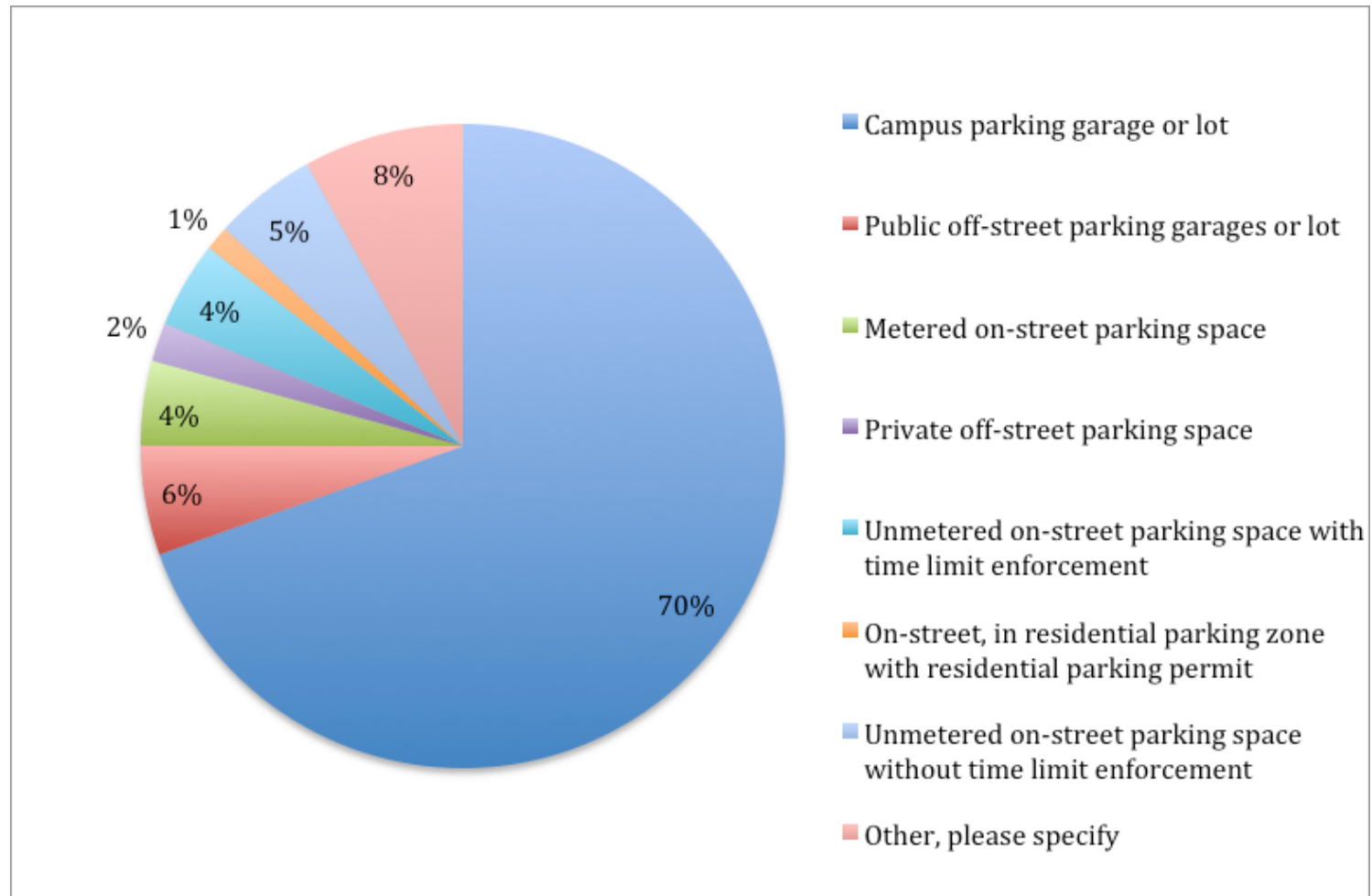
Project Results

- Overall reduction in automobile use
- Increase in regular transit use – more people stating they use transit 1-3 days a week (23% to 33%)
- Increase in bicycle use, notably in 1-3 days a week (+5%)
- Increase in more regular walking
- Decrease in exclusive drive alone use
- Increase in lower frequency car use
- Significant increase in occasional carpool use (5% - 12%)
- Significant increase in occasional carshare use (4% - 16%)

University of California, Berkeley Case Study



Parking Preferences



The “Other” category (eight percent) includes parking at BART stations, the Lawrence Berkeley National Laboratory, parking with disabled person placards or plates either on or off campus, private parking lots under contract with UC Berkeley, and parking on campus Nobel laureate (NL) parking space.

Survey Results

– Employee Parking Choice Analysis

- Parking users are willing to pay \$0.25 to walk a minute less
- Price elasticity of parking demand is the highest for variable parking pricing
- Parking users are more sensitive to changes in the pricing of flexible parking options
- Flexible parking permits become more attractive when bundled with transit incentives

Implications for Parking Policies

- Parking pricing is a powerful TDM strategy and can allocate parking resources efficiently
- Changes in pricing have to be coupled with other incentives
- Flexible parking permits are the most efficient
- Differences in value of walking time provide insights to optimal parking locations
- Alternative parking locations must be considered when designing parking policies

Parking policy influences mode choice and urban design, which will ultimately affect environmental quality, development density, land use, and the quality of the pedestrian environment.

Thank You

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