THE IMPACT OF PARKING PRICING AND TRANSIT FARES ON MODE CHOICE TO A MAJOR UNIVERSITY CAMPUS
Overview

- Problem statement
- Current scenario
- Data set characteristics
- Model Development
- Policy Scenario Tests
- Limitations
- Conclusions
Problem Statement

How will parking pricing and transit fare subsidies impact mode share of UC Berkeley commuters?

- Developed Mode & Parking Choice Model for UC Berkeley commuters
- Tested pricing policy scenarios
The Current Scenario

Mode Shares

- Walk: 47%
- Drive Alone: 14%
- Carpool: 3%
- Transit: 24%
- Bike: 12%
The Current Scenario

Parking Choices

- UC Lot: 81% (5945)
- City Facilities: 15% (1066)
- Other: 4% (280)
Dataset Characteristics

Online survey of UC Berkeley affiliates
- Population = 50,300; ~10% response rate

Drive-Alone Faculty Household Distribution
- 25% of drive-alone faculty households in our sample are within 1 mile of a BART station.

Drive-Alone Staff Household Distribution
- 35% of drive-alone staff households in our sample are within 1 mile of a BART station.
Model Development and Assumptions

- All trips to campus end at the West Gate
- Most frequent mode is linked to most frequent arrival time
- Transit riders always choose the fastest trip
Models Tested

- Transit
  - Carpool
    - UC
    - Private Lot
    - RPP
    - Meter
    - On-Street
    - Non-RPP
    - Other
  - Drive Alone
    - UC
    - Private Lot
    - RPP
    - City Garage
    - Meter
    - On-Street Non-RPP
    - Other
- Active
  - Bike
  - Walk
Models Tested

\[ \lambda = 0.116 \]

\[ \lambda = 0.214 \]

\[ \lambda = 0.769 \]

- **Transit**
  - **Carpool**
    - **UC**
    - **Private Lot**
    - **RPP**
    - **Meter**
    - **On-Street**
    - **Non-RPP**
    - **Other**
  - **Drive Alone**
    - **UC**
    - **Private Lot**
    - **RPP**
    - **City Garage**
    - **Meter**
    - **On-Street Non-RPP**
    - **Other**

- **Active**
  - **Bike**
  - **Walk**
Findings

- Commuters are more likely to drive if:
  - > 70 yrs. Old (~1%)
  - Live in hills surrounding campus

- Females are less likely to bike

- In general, campus commuters:
  - Favor walking, biking, and transit over carpool and driving
  - Prefer driving alone to carpooling
Policy Scenario Tests

Tests:

- Parking Restrictions
- Transit Subsidies
- Composite Scenarios

Baseline Scenario:
- Bike: 15%
- Drive Alone: 25%
- Transit: 42%
- Walk: 3%
- Carpool: 14%
# Parking Restrictions

<table>
<thead>
<tr>
<th>Scenario Description</th>
<th>Net Cost to U.C. (millions)*</th>
<th>Drive Share Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parking restrictions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase U.C. Permit Prices by 10%</td>
<td>($0.5)</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Double U.C. Permit Prices</td>
<td>($4.4)</td>
<td>-1.8%</td>
</tr>
<tr>
<td>Price RPP as meters; double all parking prices</td>
<td>$5.6</td>
<td>-4.0%</td>
</tr>
<tr>
<td>Travel Time Tiered Permit Structure</td>
<td>$0.8</td>
<td>-1.2%</td>
</tr>
<tr>
<td>Income Tiered Permit Structure</td>
<td>$0.6</td>
<td>-0.9%</td>
</tr>
<tr>
<td>Larger Student Permit Exclusion Zone</td>
<td>$0.7</td>
<td>-1.2%</td>
</tr>
</tbody>
</table>
# Transit Subsidies

<table>
<thead>
<tr>
<th>Scenario Description</th>
<th>Net Cost to U.C. (millions)*</th>
<th>Drive Share Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit subsidies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% BART subsidy</td>
<td>$9.9</td>
<td>-1.1%</td>
</tr>
<tr>
<td>10% transit subsidy</td>
<td>$1.6</td>
<td>-0.3%</td>
</tr>
<tr>
<td>100% transit subsidy</td>
<td>$19.9</td>
<td>-2.8%</td>
</tr>
</tbody>
</table>
## Composite Scenarios

<table>
<thead>
<tr>
<th>Scenario Description</th>
<th>Net Cost to U.C. (millions)</th>
<th>Drive Share Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Composite scenarios</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.C. Permit Price 50%; 25% Transit subsidy</td>
<td>$1.9</td>
<td>-1.6%</td>
</tr>
<tr>
<td>Double parking prices, 100% Transit subsidy</td>
<td>$18.3</td>
<td>-5.2%</td>
</tr>
<tr>
<td>Break even</td>
<td>$0</td>
<td>-2.5%</td>
</tr>
</tbody>
</table>

The preferred scenario is shown in the pie chart below:

- **Bike**: 15%
- **Drive Alone**: 27%
- **Transit**: 43%
- **Walk**: 12%
- **Carpool**: 2%
Limitations

- Survey design
- No parking supply model
- Novel modes?

Bay Area Bike Share
Conclusions

- Mode choice analyses could inform TDM strategies
- Limitations to reducing drive-alone share
- Parking price increases should be paired with transit subsidies
THE IMPACT OF PARKING PRICING AND TRANSIT FARES ON MODE CHOICE IN BERKELEY, CA