Project ASTRA 2008/017 - Participants

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Overview

• Definition
  • Two or more persons, not belonging to the same household, sharing a trip, or a part of it, with the passengers contributing to the driver’s expenses.

• Goal
  • Understand and model the attitude toward carpooling of the Swiss public

• Methodologies
  • Discrete choice modeling
  • Qualitative analysis, cluster analysis

• Data
  • Survey with stated choice exercise and qualitative questions (2010-2011)
    • Stated choice exercise based on reported trips
    • 1683 persons recruited in Switzerland (51% response rate)
**Context**

Sharing
- Information, pictures, video, etc.
- Objects

“Servicizing”
- Accessing instead owning

Community (Peer-to-peer)
- Virtual communities → Real world

Car culture
- Young generations less interested in owning a car
Qualitative questions: Summary

- Positive Attitude: 76% Positive
- Readiness to participate: 51% would participate
- Most important characteristics of the trip-mate: Driving style, Smoker, Appearance/Demeanor
- Basis for sharing the costs: Gasoline cost (70%)
- Maximal deviation for the Driver: up to 10 Minutes (83%)
- Barriers: Time adjustments, Fixed working time, Risk not being picked up
- Preferred incentives: Back-to-home guarantee, Pooling Platform, Financial incentives
What motivate potential carpoolers?

- **environmental relief**: 60% very important, 30% rather important, 10% rather unimportant, 0% totally unimportant, 0% no opinion
- **saving of CO2**: 60% very important, 30% rather important, 10% rather unimportant, 0% totally unimportant, 0% no opinion
- **decongestion of roads**: 50% very important, 30% rather important, 20% rather unimportant, 0% totally unimportant, 0% no opinion
- **decongestion of parking lots**: 50% very important, 30% rather important, 20% rather unimportant, 0% totally unimportant, 0% no opinion
- **saving expenses**: 70% very important, 20% rather important, 10% rather unimportant, 0% totally unimportant, 0% no opinion
- **saving time vs public transport**: 60% very important, 30% rather important, 10% rather unimportant, 0% totally unimportant, 0% no opinion
- **social aspect**: 60% very important, 30% rather important, 10% rather unimportant, 0% totally unimportant, 0% no opinion
Clusters

• **Not interested / Negative (4.5%)**
  • No factors
  • Older, small HH, high or low Income, Retired

• **Pragmatic (18.8%)**
  • Egoism and Convenience
  • Young, avg. to high Income, Employed

• **Skeptical environmentalist (45%)**
  • Environment / Altruism and Reliability / Safety
  • Female, avg. to low Income, PT oriented

• **Enthusiastic environmentalist (31.7%)**
  • Environment / Altruism
  • Young to middle age, avg. to high Income, Well educated, Employed
<table>
<thead>
<tr>
<th></th>
<th>Car Pooling Driver</th>
<th>Car Pooling Passenger</th>
<th>Car alone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Cost</td>
<td>3.2 CHF</td>
<td>1.9 CHF</td>
<td>3.5 CHF</td>
</tr>
<tr>
<td>Parking Cost</td>
<td>4.8 CHF</td>
<td></td>
<td>4.8 CHF</td>
</tr>
<tr>
<td>Travel Time</td>
<td>35 Min</td>
<td>24 Min</td>
<td>30 Min</td>
</tr>
<tr>
<td>Walking time</td>
<td>7 Min</td>
<td>5 Min</td>
<td>0 Min</td>
</tr>
<tr>
<td>Acquaintance as trip mate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk of missing the passenger</td>
<td>4 /Year</td>
<td>Risk of missing the lift</td>
<td>4 /Year</td>
</tr>
<tr>
<td>Risk of missing the lift</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Stated Choice Model (Panel)

<table>
<thead>
<tr>
<th></th>
<th>Car Alone</th>
<th>CP Driver</th>
<th>CP Passenger</th>
<th>PT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Cost</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.11</td>
<td>-0.05</td>
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<tr>
<td>Walking Time</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.07</td>
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<tr>
<td>Travel time</td>
<td>-0.09</td>
<td>-0.11</td>
<td>-0.14</td>
<td>-0.06</td>
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<tr>
<td>Inertia</td>
<td><strong>1.11</strong></td>
<td>-</td>
<td>-</td>
<td><strong>1.92</strong></td>
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<tr>
<td>Transfers Time</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.06</td>
</tr>
<tr>
<td>Transfers (n)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.10</td>
</tr>
<tr>
<td>Season Ticket</td>
<td>-</td>
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<td>-</td>
<td>0.86</td>
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<tr>
<td>Male</td>
<td>0.43</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Car Always</td>
<td>0.97</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Parking Cost</td>
<td>-0.10</td>
<td>-0.17</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trip mate Colleague</td>
<td>-</td>
<td><strong>0.60</strong></td>
<td><strong>0.60</strong></td>
<td>-</td>
</tr>
<tr>
<td>Household Dimension</td>
<td>-</td>
<td>0.08</td>
<td>0.08</td>
<td>-</td>
</tr>
<tr>
<td>German Speaking</td>
<td>-</td>
<td><strong>0.31</strong></td>
<td><strong>0.31</strong></td>
<td>-</td>
</tr>
<tr>
<td>Female</td>
<td>-</td>
<td>-0.43</td>
<td>-0.43</td>
<td>-</td>
</tr>
<tr>
<td>Carsharing user (SP)</td>
<td>-</td>
<td><strong>1.20</strong></td>
<td><strong>1.20</strong></td>
<td>-</td>
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<tr>
<td>Constant</td>
<td>5.21</td>
<td>5.02</td>
<td>5.47</td>
<td>-</td>
</tr>
</tbody>
</table>

Observations: 4620          Adj. Rho-square: 0.369
Simulation

• Agent based simulation MATSim

• Scenario: 30km radius around Bellevueplatz in Zürich.

• Average weekday of 601'788 Agents (2'014’993 Trips)

• Total distance = 23’540’957 km (Avg. = 11,68 km)

• For each agent has been tested if a convenient carpool could be build

Potential between 9 and 35 % of existing trips
Remarks

• Is carpooling really on the verge of a breakthrough in Switzerland?

• Possible reasons of the (for carpooling very positive) results are:
  • Reflects some assumptions on carpooling which might be unrealistic for some potential participants (temporal deviation, available matches, etc.)
  • SP sometimes closer to self-representation than to reality
  • Sample bias (self-selection effect)
  • Learning process?
Conclusions

• Overall, the existence of a good unexploited potential for carpooling in Switzerland is suggested.

• In general the public shows interest in innovative transport solutions

• Technology might help exploiting this potential

• The context is positive for innovation in transport and for all forms of “shared economy”
Thank you for your attention!
Correlation willingness to be a driver/passenger

- I have no car
- Willingness driver
- Willingness passenger
- Yes
- Rather yes
- Rather no
- No

![3D bar chart showing correlation between willingness to be a driver/passenger and having a car.](image)
Strategy to upscale carpooling

*Enthusiastic environmentalist* → Early phase, little advertisement centered on environmental benefits

*Skeptical environmentalist* → When most flaws are solved, large advertisement centered on environmental benefits, safety, reliability

*Pragmatic* → When evidence of personal benefits emerges from practice, large advertisement centered on reliability and personal benefits

*Non-interested* → No advertisement at all, might change if carpooling become mainstream
Statistics: Sample vs. Micro-census

- Gender= + Male
- Age: - Young + Middle Age
- Education: ++ Tertiary
- Household Size: + Larger households
- Cars in the household: + Multiple cars (>=2)
- Public Transport Season Tickets: + HF + GA
- Income: + Affluent
How should be a Carpooling platform?

- **entering data in a short time**: 60%
- **protection of personal data**: 60%
- **clear structure for fees**: 80%
- **having mobile phone number of riding/mate**: 80%
- **possibility for allowance for smoking in the car**: 80%
- **possibility for rating of ride-mates**: 80%
- **possibility to look for a ride on the road**: 80%
- **restriction to certain users (f.ex. Collegues from work)**: 80%
- **preferences for gender of ride/mates**: 80%

**Important levels**:
- **very important**
- **rather important**
- **rather unimportant**
- **totally unimportant**
- **no opinion**