CAR-POOLING POTENTIAL IN SWITZERLAND

F. Ciari

May 2013

Institut für Verkehrsplanung und Transportsysteme
Institute for Transport Planning and Systems

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Project ASTRA 2008/017 - Participants

Franz Mühlethaler

Prof. Kay Axhausen
Francesco Ciari

Institut für Verkehrsplanung und Transportsysteme
Institute for Transport Planning and Systems

Monica Tschannen

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

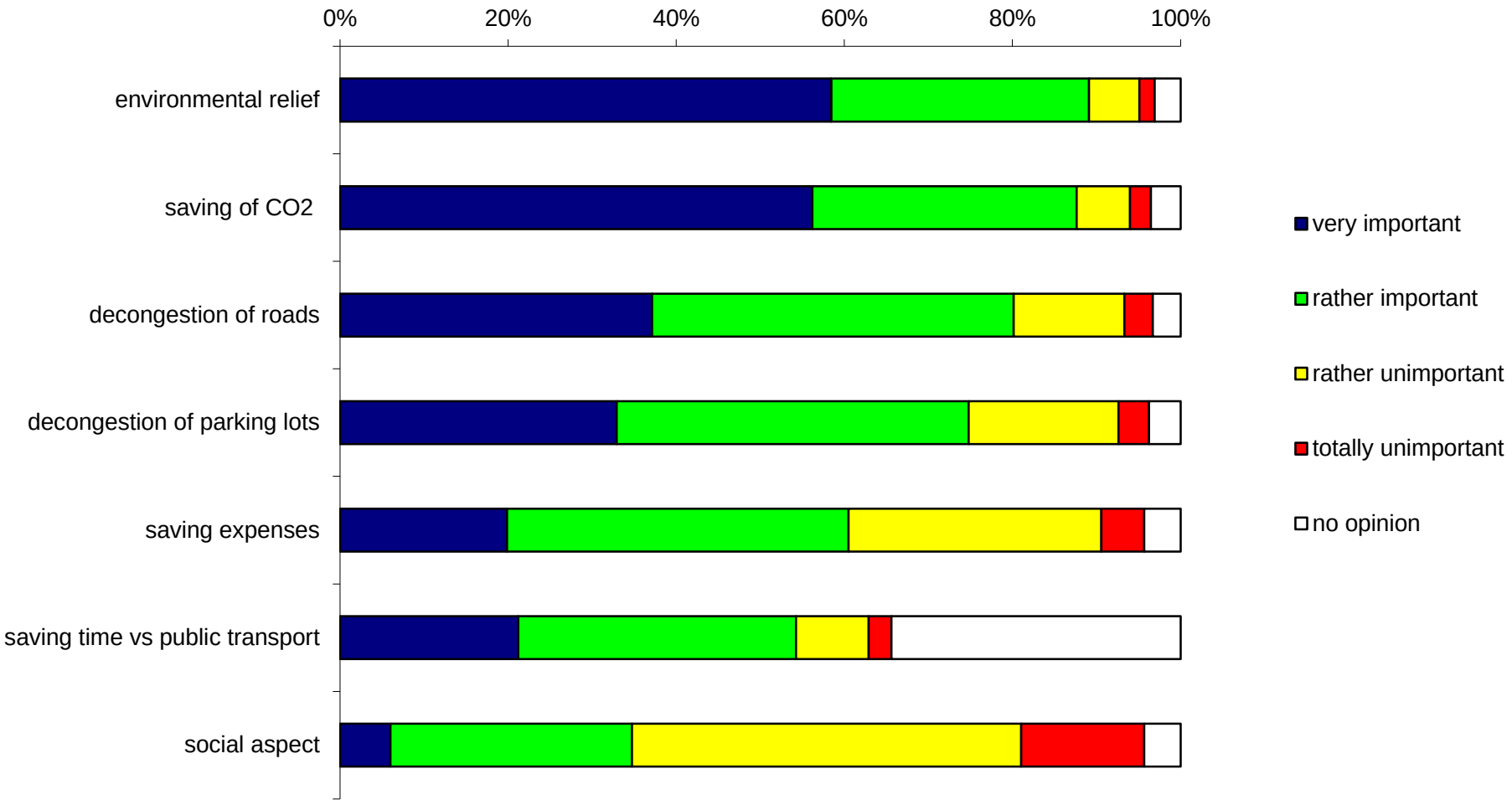
Car culture

- 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?



Clusters

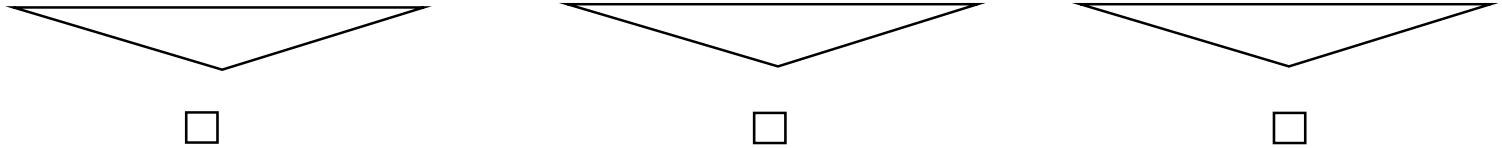
- Not interested / Negative (4.5%)
  - No factors
  - Older, small HH, high or low Income, Retired
- Pragmatic (18.8%)
  - Egoism and Convenience
  - Young, avg. to high Income, Employed
- Skeptical environmentalist (45%)
  - Environment / Altruism and Reliability / Safety
  - Female, avg. to low Income, PT oriented
- Enthusiastic environmentalist (31.7%)
  - Environment / Altruism
  - Young to middle age, avg. to high Income, Well educated, Employed

Stated choice - Questionnaire

Car Pooling Driver		
Travel Cost	3.2	CHF
Parking Cost	4.8	CHF
Travel Time	35	Min
Walking time	7	Min
Acquaintance as trip mate		
Risk of missing the passenger	4	/Year

Car Pooling Passenger		
Travel Cost	1.9	CHF
Travel Time	24	Min
Walking time	5	Min
Unknown as trip mate		
Risk of missing the lift	4	/Year

Car alone		
Travel Cost	3.5	CHF
Parking Cost	4.8	CHF
Travel Time	30	Min
Walking time	0	Min



Stated Choice Model (Panel)

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

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?

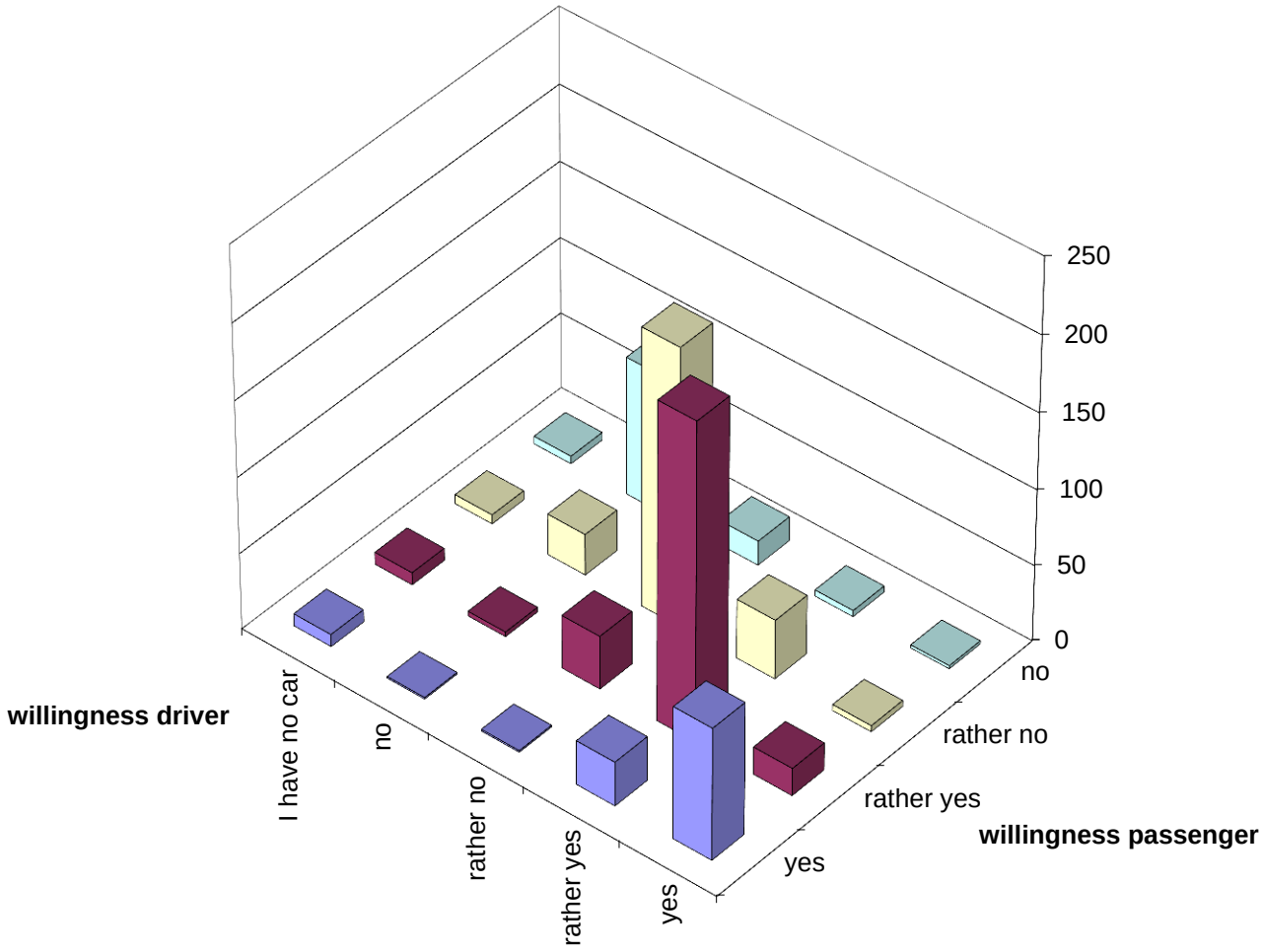
- Possible reasons of the (for carpooling very positive) results are:
  - Reflects some assumptions on carpooling which might be unrealistic for some potential participants (temporal deviation, available matches, etc.)
  - SP sometimes closer to self-representation than to reality
  - Sample bias (self-selection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



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?