On the Influence of Cost and Time on the Willingness to Share a Ride: A Scenario Analysis

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There is a massive potential of sharing rides with little incurred delays, and this applies to very different urban settings – *Tachet et al*, 2017.
Why are there not more pooled rides?

PROS
- Cost Savings

CONS
- Additional Time
- Safety Concerns
- Lack of Privacy
- Reduced Comfort
Individual ride
- Riding time: 12 min
- Price: 7,50 €

Shared ride
- Riding time: 15 min
- Additional passengers: 2
- Price: 4,20 €
1006 valid respondents
- Non-working individuals: 12.00 €/h (16.25 €/h)
- Working individuals: 14.50 €/h (20.08 €/h)
- 1 add. pax: 0.44 €/trip (0.52 €/trip)
- 2 add. pax: 0.44 €/trip (0.52 €/trip)
- 4 add. pax: 2.40 €/h (2.85 €/h)

(Values in parenthesis, correspond to model with random coefficients for time and cost)
SCENARIO ANALYSIS
Share of pooled trips for different time-cost trade-offs

- 20 min individual trip length; 1 or 2 extra passengers

Shares between 11% and 85%
Share of pooled trips for different time-cost trade-offs

- 20 min individual trip length; 4 extra passengers

Shares between 5% and 80%
Share of pooled trips for different trip lengths

- **Pooled trip: 2 € discount**

- 1 or 2 add. pass.: No influence
- 4 add. pass.: ~7% drop per add. 10 minutes
CURRENT SITUATION

- + 10 min average added time
- 25-60% price savings
- 1 or 2 additional passengers

SELECTED SCENARIO

- Individual ride: 20 min, 6 €
- Pooled ride: +10 min, -2 € (-33%)

41% with 1-2 add. pass. / 29% with 4 add pass.
SELECTED SCENARIO

- Individual ride: 20 min, 6 €
- Pooled ride: +10 min, -2 € (-33%)

41% with 1-2 add. pass. / 29% with 4 add pass.

INCREASE IN PRICE difference

- Additional 1 € price difference (3 € price difference in total)
- E.g., through tax in individual rides or subsidy in pooled rides

59% with 1-2 add. pass. / 47% with 4 add pass
(i.e., +18% / +18%)
SELECTED SCENARIO

- Individual ride: 20 min, 6 €
- Pooled ride: +10 min, -2 € (-33%)

41% with 1-2 add. pass. / 29% with 4 add pass.

DECREASE IN TIME DIFFERENCE

- Total time difference between alternatives: 3 min (possible according to simulation studies)
- E.g., allocating dedicated and visible curb space

76% with 1-2 add. pass. / 68% with 4 add pass

(i.e., +35% / +39%)
Conclusions

- Potential for an increasing uptake of pooled rides
- Cost-time trade-offs more important than pooling per-se
- The concrete number of fellow passengers plays a role

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Explanation of the pooled on-demand service

**Step 1: Book your ride with your smartphone or tablet**
- When you need a ride, introduce your desired start and end trip locations.
- Your smartphone/tablet shows the possible availabilities.
- You confirm your trip.

**Step 2: Walk to the pick-up point**
- Your current location is 1 minute walking distance to the pick-up point.
- A map in your smartphone/tablet shows you the exact pick-up point.

**Step 3: The ride**
- You travel together with up to 5 other people.
- You may need to make a small detour to pick-up or drop-off other passengers.
## Attribute levels

<table>
<thead>
<tr>
<th></th>
<th>Short version</th>
<th>Medium version</th>
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<tbody>
<tr>
<td></td>
<td>Level 1</td>
<td>Level 2</td>
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<tr>
<td>Expected time (Individual ride) [min]</td>
<td>10</td>
<td>15</td>
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<tr>
<td>Extra expected time (Shared ride) [min]</td>
<td>3</td>
<td>6</td>
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<tr>
<td>Number of other additional passengers (Shared ride) [add. passenger]</td>
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<td>2</td>
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<tr>
<td>Cost (Shared ride) [Euro]</td>
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<td>Extra cost (Individual ride) [Euro]</td>
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### Sample description

<table>
<thead>
<tr>
<th>Socio-economic variable</th>
<th>Category</th>
<th>Total sample (N=1006)</th>
<th>Dutch (very) high urbanised areas</th>
<th>Dutch 2018 shares</th>
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<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>48,2%</td>
<td>48.9%</td>
<td>49,6%</td>
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<td>Female</td>
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<td>Age</td>
<td>18* to 39</td>
<td>38,1%</td>
<td>38.1%</td>
<td>31,8%</td>
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<td>40 to 64</td>
<td>35,6%</td>
<td>42.0%</td>
<td>44,0%</td>
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<td></td>
<td>65 and above</td>
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<td>19.8%</td>
<td>24,2%</td>
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<td>Education</td>
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<td>37,8%</td>
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<td>High</td>
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<td>1,4%</td>
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<td>Work status</td>
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<td>50,9%</td>
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<td>No working</td>
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<td>49,1%</td>
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<td>Household</td>
<td>1 person household</td>
<td>49,0%</td>
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<td>38,2%</td>
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<tr>
<td></td>
<td>&gt; 1 person household</td>
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<td>61,8%</td>
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<td>Urbanisation level</td>
<td>&gt;2500 inhab./km²</td>
<td>46,9%</td>
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<td>23,3%</td>
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<td>1500-2500 inhab./km²</td>
<td>53,1%</td>
<td>51,8%</td>
<td>25,1%</td>
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* 18 to 39 for the share sample, but 20 to 39 for the Dutch population 2018 values