Route Choice Preferences of Cyclists in Switzerland

A SP-Survey as part of the EBIS Project

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The Experiment

- Was designed to complement the RP-Data available from the survey
- We partnered with fixmycity (Berlin) for image creation
- The experiment had a turnout rate of ca. 85%
- Total responses: 2569 (and counting)...

What does the literature state that is important

- In sum, all of the cycling route choice studies come to the same conclusion when it comes to the quality of cycling infrastructure:

    - The more separation from car traffic the better.
    - There are mixed findings on the type of separation (eg. Through wide-enough cycling lanes or through cycling paths).
    - Generally phyisical separations are preferred (cycling paths).

The experiment design

- 13 choice situations split in 3 blocks

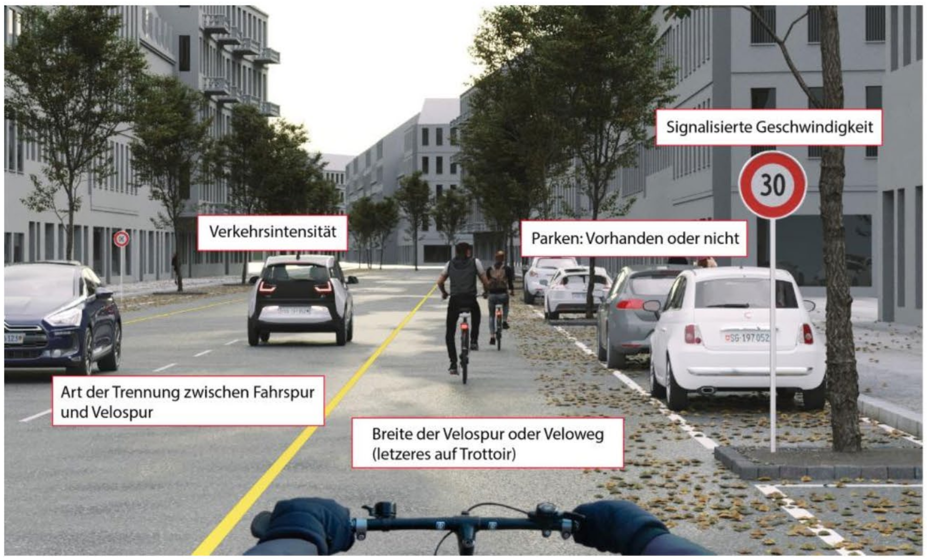
- Street types:
    - Main street (with cycling path or cycling lane)
    - Neighborhood street

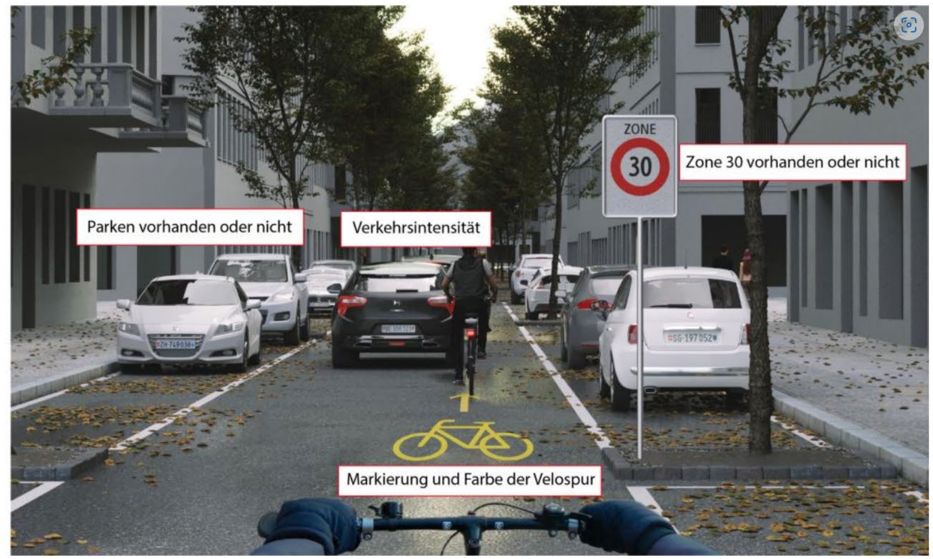
- Novelty in our experiment: We force a trade-off between cycling infrastructure qualities and travel times, to find a willingness-to-pay for each infrastructure element

Choice situations

• **Block 1:** Comparisons between main and neighborhood streets

Erster Block: Vergleiche zwischen Hauptstrassen und Quartierstrassen
Unten sehen Sie Beispielabbildungen sowie die jeweiligen Merkmale aufgeführt, die variiert werden.





Choice situations

- Example choice situation for Block 1

Wegzeit: **7 Minuten**

Wegzeit: **7 Minuten**

Choice situations

•**Block 2:** Comparisons among two main street examples

Choice situations

• **Block 3:** Comparisons of two neighborhood street segments

Wegzeit: **7 Minuten**

Wegzeit: **10 Minuten**

First results

	Parameter	t-ratio(0)
ASC Neighborhood Street	0	NA
ASC Main Street	-0.42	-4.75
Neigh. Street without cycling infrastructure	0	NA
Neigh. Street with yellow bike symbol	0.45	10.89
Neigh. Street with large bike symbol and naming	0.89	21.53
Neigh. Street with large bike symbol and red paint	0.6	14.91
Neigh. Street no parking	0	NA
Neigh Street with parking	-1.03	-27.43
Neigh. Street low traffic volume	0	NA
Neigh. Street high traffic volume	-1.13	-25.18
Main street low traffic volume	0	NA
Main street high traffic volume	-0.04	-1.33
Main street speed limit 30 km/h	0	NA
Main street speed limit 50 km/h	-0.06	-2.48
Travel time (neighborhood street)	-0.74	-27
Travel time (main street)	-0.69	-28.22
Main street no parking	0	NA
Main street with parking	-0.57	-19.76
Main street narrow cycling infrastructure	0	NA
Main street wide cycling infrastructure	0.63	25.67
Main street cycling path without physical separation	0	NA
Main street cycling path with physical separation	0.38	7.33
QS1 - Main street cycling path	0	NA
QS2 - Main street cycling path with buffer zone	0.26	4.37
QS3 - Main street cycling lane	1.15	22.94
Interaction QS2 traffic volume	0.14	2.66
Interaction physical separation, traffic volume	-0.23	-3.81
Interaction physical separation, QS2	-0.44	-8.36
Scaling parameter experiment both	1	NA
Scaling paramenter experiment main street	1.34	24.96
Scaling parameter experiment neigh. Street	0.92	24.92

Calculation of the willingness to pay

$$WTP = \frac{\beta_{Infrastructure\ element\ quality} - \beta_{Reference\ quality}}{\beta_{travel\ time}}$$

Willingness to pay

	Parameter	t-ratio(0)	WTP [min/Quality]	% WTP to average traveltime (10min)
ASC Neighborhood Street	0	NA		
ASC Main Street	-0.42	-4.75		
Neigh. Street without cycling infrastructure	0	NA		
Neigh. Street with yellow bike symbol	0.45	10.89	61%	6%
Neigh. Street with large bike symbol and naming	0.89	21.53	120%	12%
Neigh. Street with large bike symbol and red paint	0.6	14.91	81%	8%
Neigh. Street no parking	0	NA		
Neigh Street with parking	-1.03	-27.43	-139%	-14%
Neigh. Street low traffic volume	0	NA		
Neigh. Street high traffic volume	-1.13	-25.18	-153%	-15%
Main street low traffic volume	0	NA		
Main street high traffic volume	-0.04	-1.33	-6%	-1%
Main street speed limit 30 km/h	0	NA		
Main street speed limit 50 km/h	-0.06	-2.48	-9%	-1%
Travel time (neighborhood street)	-0.74	-27		
Travel time (main street)	-0.69	-28.22		
Main street no parking	0	NA		
Main street with parking	-0.57	-19.76	-83%	-8%
Main street narrow cycling infrastructure	0	NA		
Main street wide cycling infrastructure	0.63	25.67	91%	9%
Main street cycling path without physical separation	0	NA		
Main street cycling path with physical separation	0.38	7.33	55%	6%
QS1 - Main street cycling path	0	NA		
QS2 - Main street cycling path with buffer zone	0.26	4.37	38%	4%
QS3 - Main street cycling lane	1.15	22.94	167%	17%
Interaction QS2 traffic volume	0.14	2.66	20%	2%
Interaction physical separation, traffic volume	-0.23	-3.81	-33%	-3%
Interaction physical separation, QS2	-0.44	-8.36	-64%	-6%
Scaling parameter experiment both	1	NA		
Scaling paramenter experiment main street	1.34	24.96		
Scaling parameter experiment neigh. Street	0.92	24.92		

WTP

- Reading example for first WTP value:

- The participants are willing to pay 0.6 min (or a 6% longer travel time) to ride in a neighborhood street with a bike symbol than in one without any markings.

WTP – Comparison of models estimated for different bike owner groups

	All	E-Bike (45km/h)	E-Bike (25km/h)	Conv. Bike
Neigh. Street without cycling infrastructure				
Neigh. Street with yellow bike symbol	6.1%	5.6%	7.8%	5.5%
Neigh. Street with large bike symbol and naming	12.0%	11.4%	15.2%	11.0%
Neigh. Street with large bike symbol and red paint	8.1%	7.2%	11.7%	7.2%
Neigh. Street no parking				
Neigh Street with parking	-13.9%	-13.1%	-15.6%	-13.3%
Neigh. Street low traffic volume				
Neigh. Street high traffic volume	-15.3%	-13.6%	-17.2%	-14.2%
Main street low traffic volume				
Main street high traffic volume	-0.6%	0.0%	0.0%	-0.7%
Main street speed limit 30 km/h				
Main street speed limit 50 km/h	-0.9%	1.1%	-1.3%	-0.7%
Main street no parking				
Main street with parking	-8.3%	-7.6%	-10.7%	-7.8%
Main street narrow cycling infrastructure				
Main street wide cycling infrastructure	9.1%	9.9%	9.7%	9.2%
Main street cycling path without physical separation				
Main street cycling path with physical separation	5.5%	5.1%	9.0%	5.0%
QS1 - Main street cycling path				
QS2 - Main street cycling path with buffer zone	3.8%	1.9%	7.2%	3.4%
QS3 - Main street cycling lane	16.7%	11.3%	26.4%	15.0%
Interaction QS2 traffic volume	2.0%	1.9%	2.0%	1.6%
Interaction physical separation, traffic volume	-3.3%	-3.1%	-4.5%	-2.9%
Interaction physical separation, QS2	-6.4%	-7.8%	-8.9%	-5.9%

Further work

- We are working on estimating further models, especially focusing on:
- The interaction of individual characteristics and capabilities with the infrastructure preferences
- We will also distribute the survey among non-cyclists to evaluate how their preferences differ from the cyclists.

Questions?

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