Criteria for cyclists' everyday route choice

Carmen Hagemeister, Anne Schmidt, Tina Seidel & Bernhard Schlag

Dresden University of Technology, Germany

Overview

- **Objectives**
  - Traffic planning which meets the needs of the users
- **Criteria from the literature**
- **Questionnaire**
  - questions
  - participants
  - results
- **Conclusions and discussion**

User oriented planning for cyclists

- **Making cycling more attractive**
  ⇒ change modal split in favour of cyclists
- **Using routes for cyclists**
  ⇒ comfort
  ⇒ traffic safety
- **Using sections of the road which are made for cyclists**
  ⇒ traffic safety and comfort mainly for pedestrians

User oriented planning for cyclists

User oriented planning for cyclists

⇒ **Question: What do cyclists want?**

Criteria for planning for cyclists

- **Main requirements for cycling routes in the Netherlands (C.R.O.W., 1995):**
  - coherence of planning
  - directness
  - attractiveness, appeal
  - safety
  - comfort

- **Additional questions:**
  - separation of sections for road users

Criteria for planning for cyclists

- **Network of connected routes (Netherlands)**
  - easy to find
  - standardized quality
  - freedom of route choice (at least two 2 routes)
  - complete net (reaching all sources and destinations)

- **Questions:**
  - no gaps in provisions for cyclists
  - sight at intersections

Criteria for planning for cyclists

- **Direct routes**
  - directness
  - number and length of detours
  - waiting times

Criteria for planning for cyclists

- **Attractiveness**
  - visibility of cyclists (street lamps)
  - overview
  - safety in public areas
  - appeal of surroundings
  - little noise
  - healthy air
  - no annoyance
  - fun
  - compliance with road traffic regulations

Criteria for planning for cyclists

- **Safety (=few accidents)**
- **Questions:**
  - safety of route in general
  - possibility of conflicts
  - attention focused only on traffic
  - visibility of persons in traffic
  - overview over the next sections of the road
  - safe turns and road crossings at intersections
  - passing distance of cars
  - speed of cars
  - number of cars

Criteria for planning for cyclists

- **Comfort**
  - smooth surface
  - physical effort
  - no obstacles in general
  - clear crossings
  - clear waiting areas
  - width of cycle paths
  - wind

Criteria for planning for cyclists

- **Separation of areas for traffic participants**
  - separation of motor traffic and cyclists
  - separation of cyclists and pedestrians
  - two-way cycle paths
  - indirect left turns

Questionnaire

- **Part 1**
  - data about the person and cycling habits
  - open question
    "Which features are necessary for an attractive cycling route? Do not think of cycling in your leisure time, e.g. holiday, but think of cycling in your everyday life."

Questionnaire

- **Part 2: 33 criteria**
  - not sorted in the questionnaire
  - importance: "When you decide in real life which route to cycle on, how important is the following criterion?" choices: "important", "rather important", "medium", "rather unimportant", " unimportant"
  - frequency: "How often do you find this criterion on your routes and in your environment?" choices: "always", "often", "medium", "seldom", "never"
  - open questions for some criteria

Participants

- **24 female and 50 male cyclists from Dresden (city with ~480,000 inhabitants)**
  - 17 to 71 years (mean 30 years, s = 10 years)

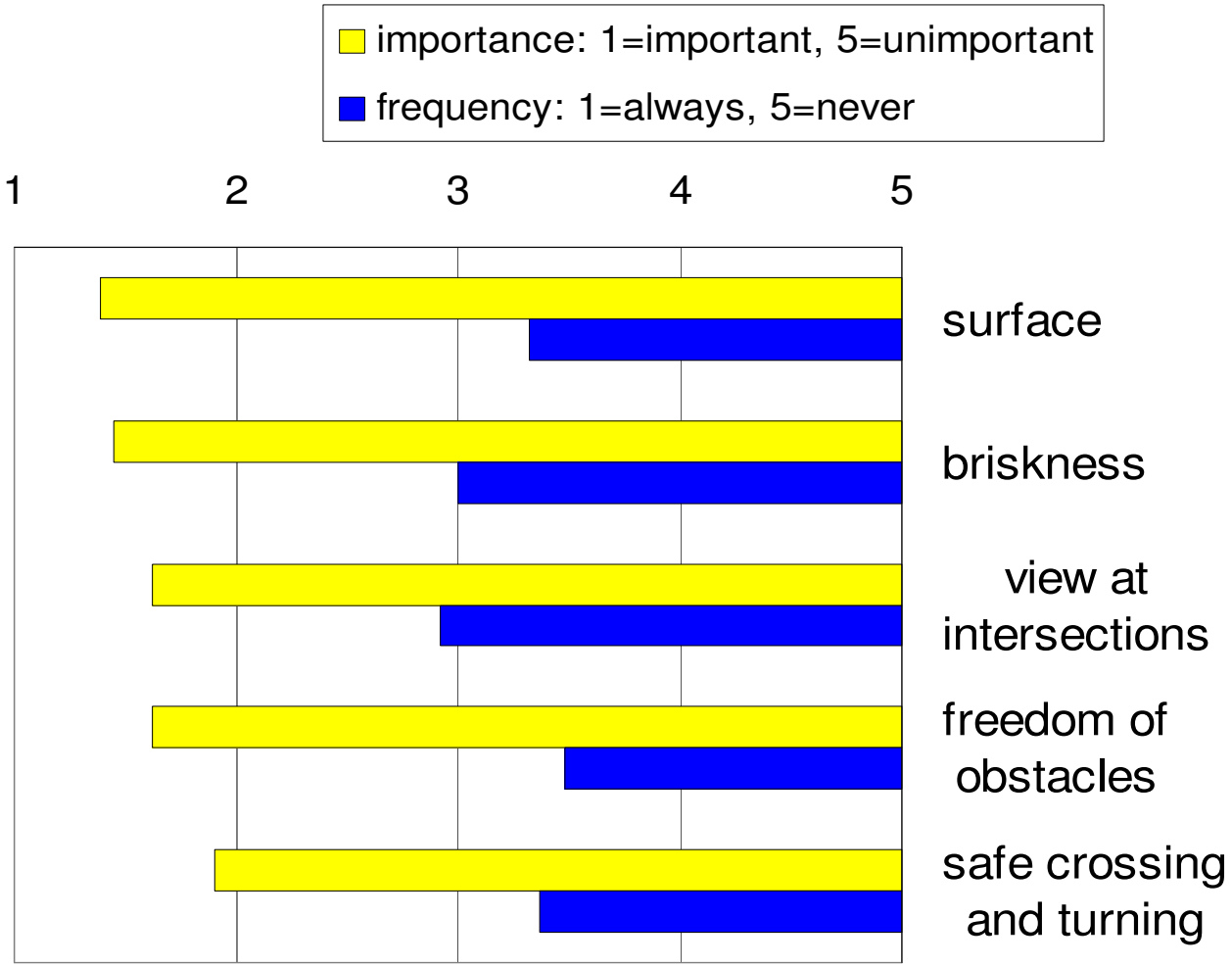
- **91% held a driving licence**
  - amount driven by car by licence holders (lifetime):
  - < 10,000 km 36%
  - < 50,000 km 31%
  - < 100,000 km 16%
  - > 100,000 km 11%

Participants

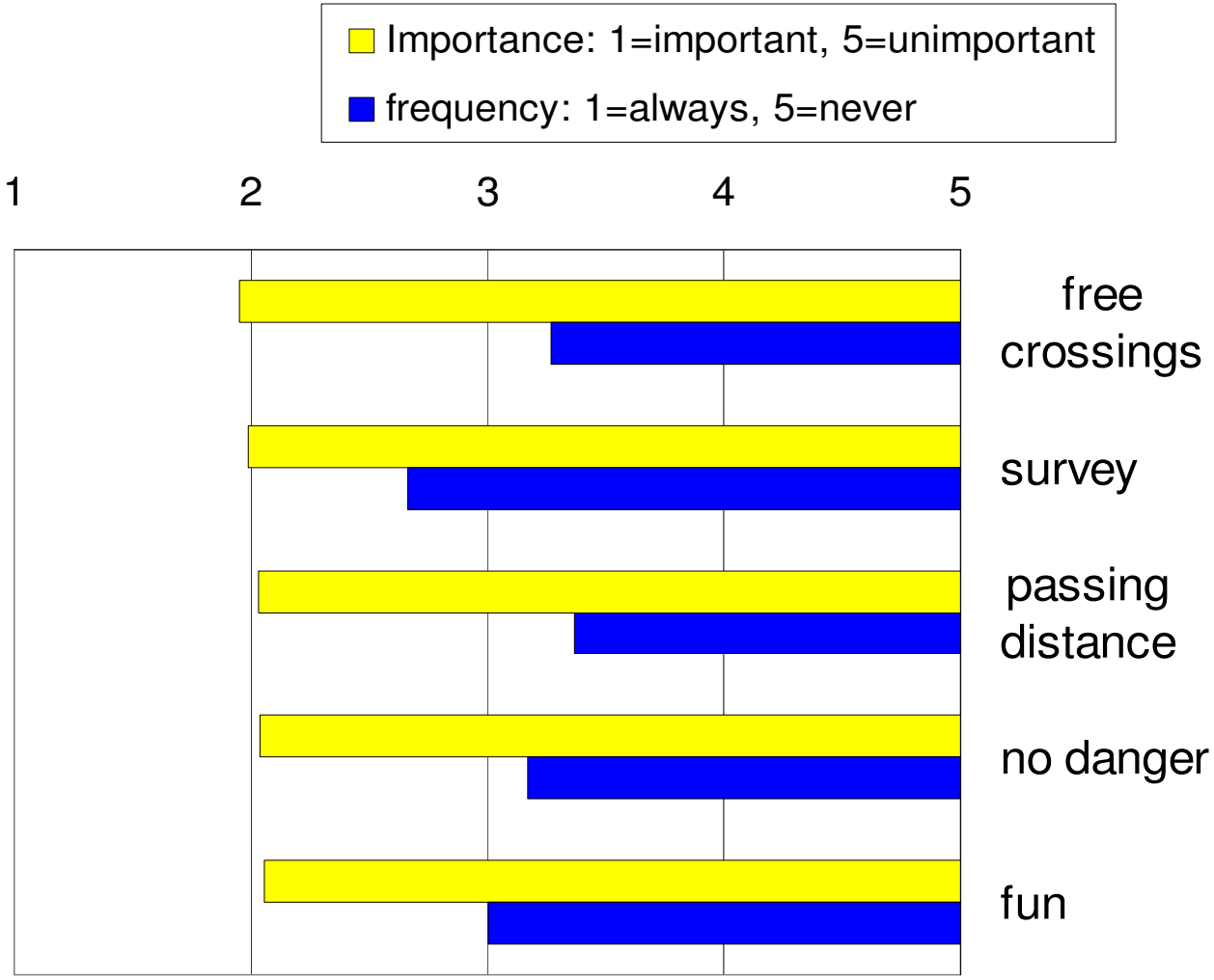
- **Mean distance cycled per year**: 4,717 km
  - all year
    68% daily or nearly daily
    3% on working days
  - 22% in the summer time daily or nearly daily
  - 6% no use of bike in winter

- **Estimation of own knowledge of road traffic regulations**
  - 32% "very good"
  - 59% "good"
  - 8% "sufficient"

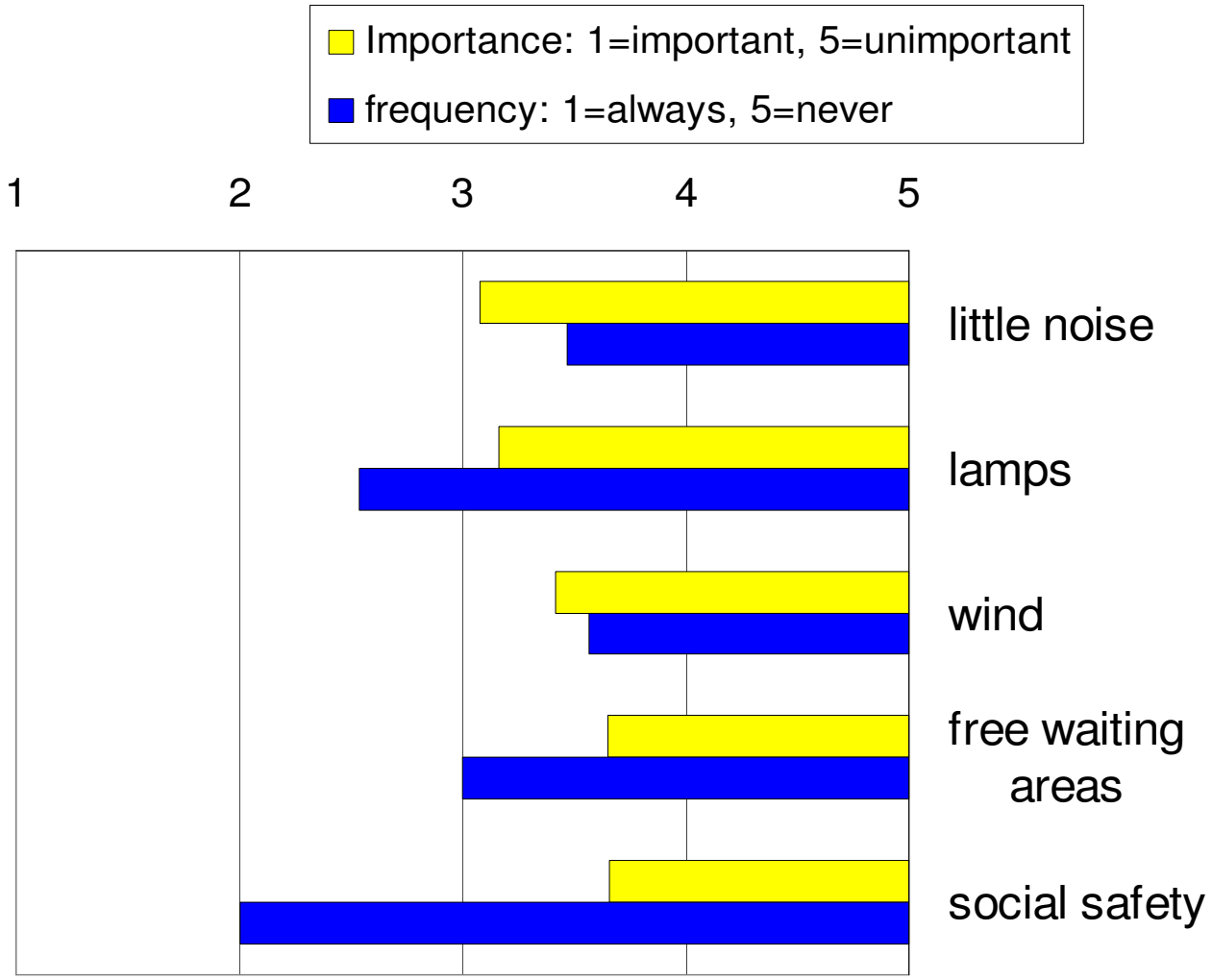
Results: Importance rank 1-5



Results: Importance rank 6-10



Results: Importance last 5 ranks



Results: open questions vs. criteria

- **similar rank independent of question**
  - surface (rank 1)
  - brisk cycling (rank 2)

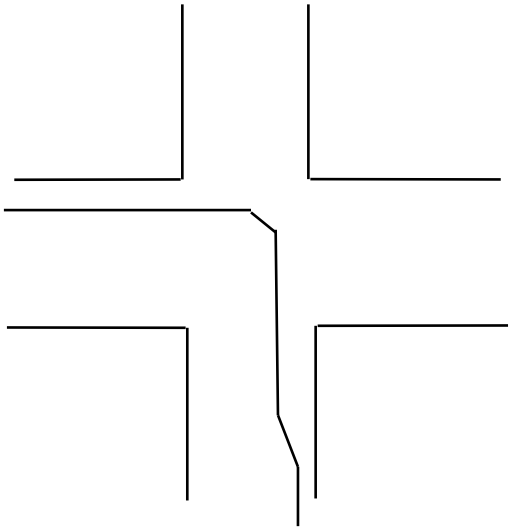
Results: open questions vs. criteria

- **different rank depending on question**
  - mentioned seldom or never to open question and rank in the upper third of the list of criteria:
    - good air
    - fun
    - view at intersections
    - survey of the way
    - free crossings

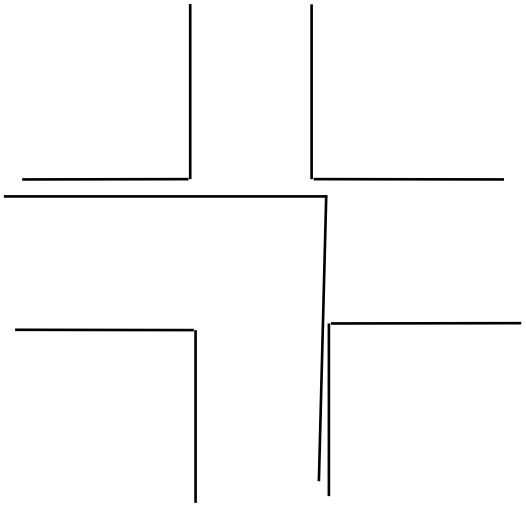
⇒ If a criterion is not mentioned when answering an open question, we cannot conclude that it is unimportant

Results: Left turns

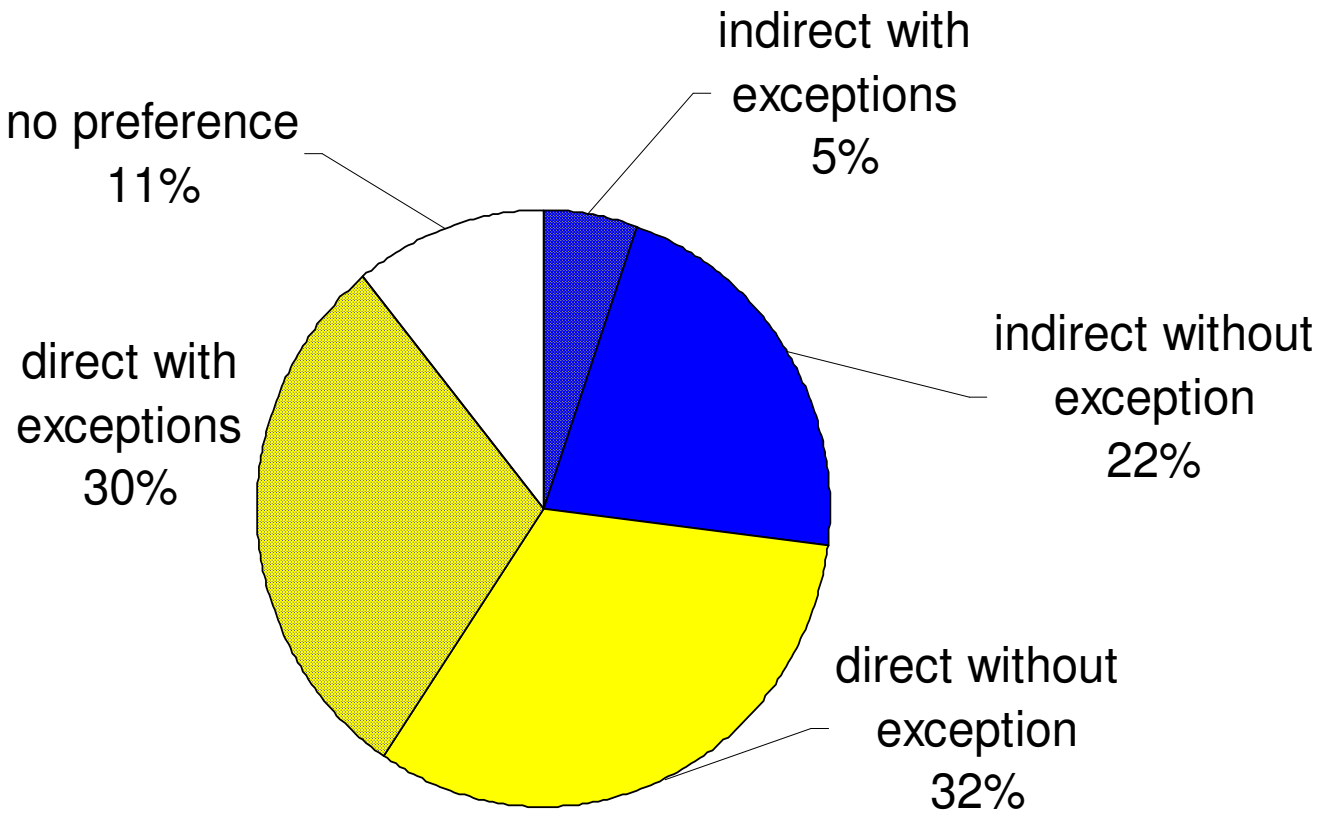
direct



indirect



Results: Left turns



Conclusions for further studies

- **Differences to results of previous research**
  - Alrutz, Bohle and Willhaus (1998) did not present cyclists a list of items as they expected them to rate every item as important
  - Result:
    Cyclists do not consider all criteria equally important when they work on a list of criteria
    ⇒ lists of criteria give important information in surveys

Conclusions for further studies

- **Differences to results of previous research**
  in the north of West Germany (Dresden is in the East)

	here rank	Alrutz et al. rank
surface	1	2
separation from motor traffic	13 (in favour)	1
briskness / speed	2	7

  - estimation of importance depends on experience
    ⇒ taking different situations into account

Conclusions for surveys

- **open vs. closed questions**
  - large differences between
    1. criteria for attractiveness of a route
    2. importance for route choice

    ⇒

    1. distinguish between both questions
    2. attractiveness is not the main criterion for route choice

- **Frequency scale did not differentiate well**
  - better choices: "nearly always" - not "always"
    "nearly never" - not "never"

Conclusions for planning

- **Different offers**
  - left turns: different needs:
    "safe"
    "brisk" (speedy)
    ⇒ **different offers necessary, if a solution is not perceived as safe and brisk at the same time**

  ⇒ attractiveness for a larger number of cyclists

  ⇒ lowering the number of violations

  - adaptation to a very inhomogeneous user group
  - dependence on cyclists competence?

Discussion

- **Further questions**
  - **How does route choice work as a process**

1. on the route?
   ⇒ Which criteria are used in practice?
   ⇒ How are they weighted?
   ⇒ Are provisions attractive for everyday use which increase travel time?

2. when persons get used to cycling?
   ⇒ How do the criteria change?
   ⇒ How does the perception of possible dangers change?

Thank you for your attention!