Preferred citation style for this presentation

König, Arnd and Kay W Axhausen (2002) The Reliability of the
Transportation System and its Influence on the Choice
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The Reliability of the Transportation System and its Influence on the Choice Behaviour

Arnd König
Kay W. Axhausen

IVT
ETH
Zurich

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ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Approach

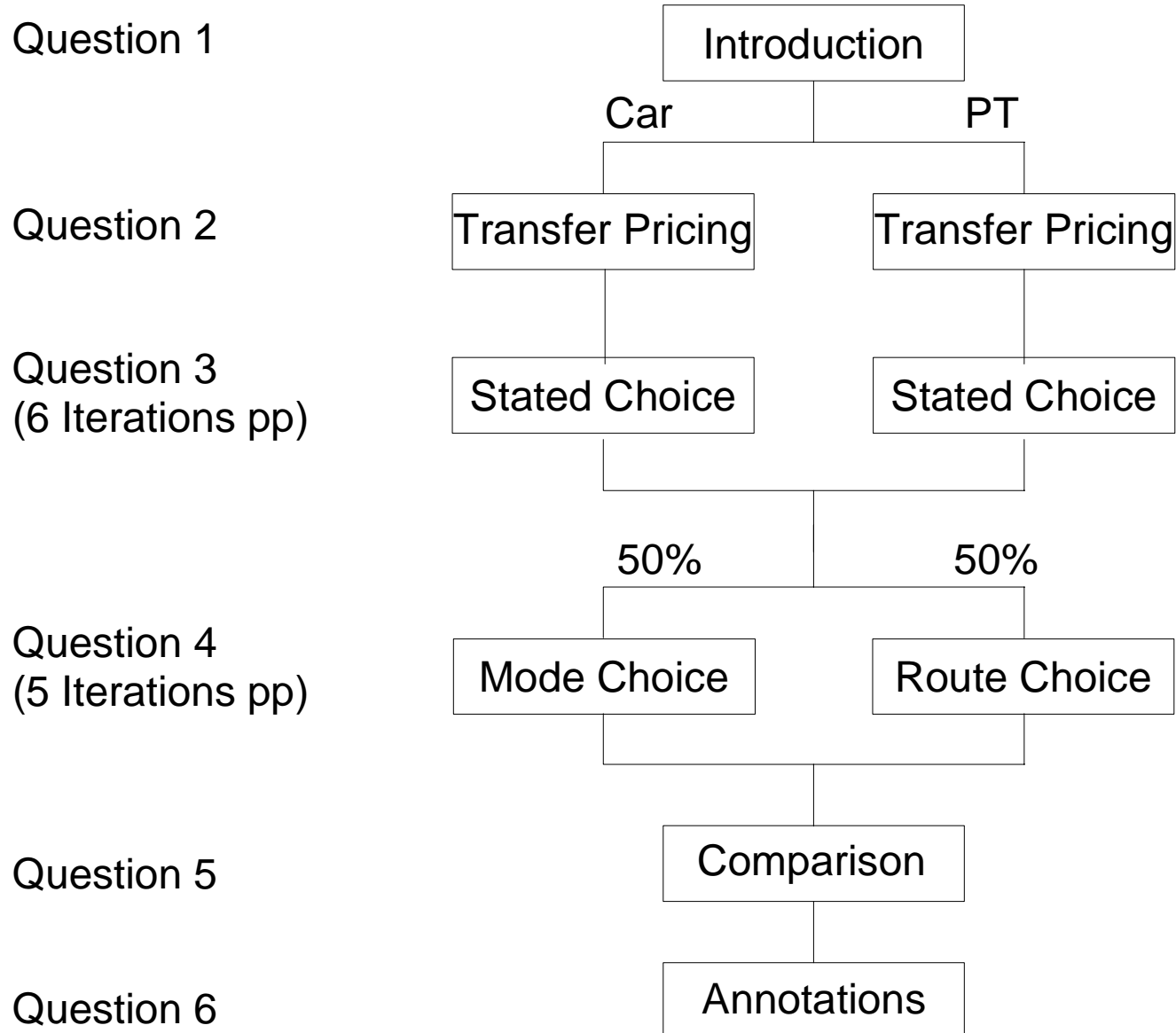Integration of the issue into choice models
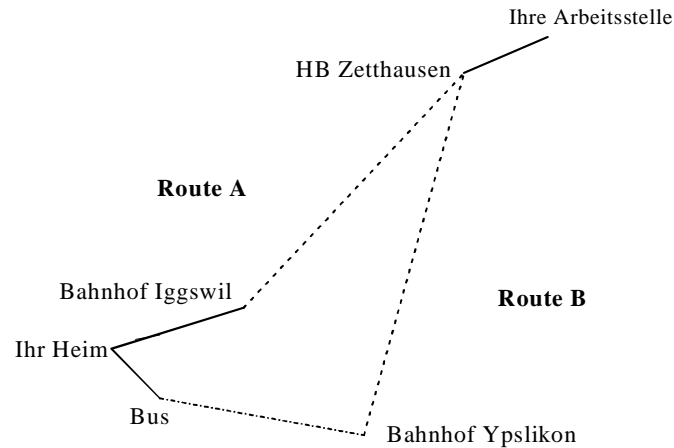
Measurement of a value of reliability

Measurement tool:

- Stated Preference survey
- Different types of SP-experiments
- Different types of presentation

Structure of the survey

Question 1 — Introduction

Car   PT

Question 2 — Transfer Pricing   Transfer Pricing

Question 3
(6 Iterations pp) — Stated Choice   Stated Choice

50%   50%

Question 4
(5 Iterations pp) — Mode Choice   Route Choice

Question 5 — Comparison

Question 6 — Annotations

Example: Route choice

Ihre Arbeitsstelle

HB Zetthausen

Route A

Bahnhof Iggswil

Route B

Ihr Heim

Bus

Bahnhof Ypslikon

Fahrzeit **Route A:**   **50 Minuten**

Fahrzeit **Route B:**   **45 Minuten**

Aufgrund Ihrer Erfahrung **verpassen Sie an 2 Tagen der Woche den Anschluss**, weil der Bus unpünktlich ist.

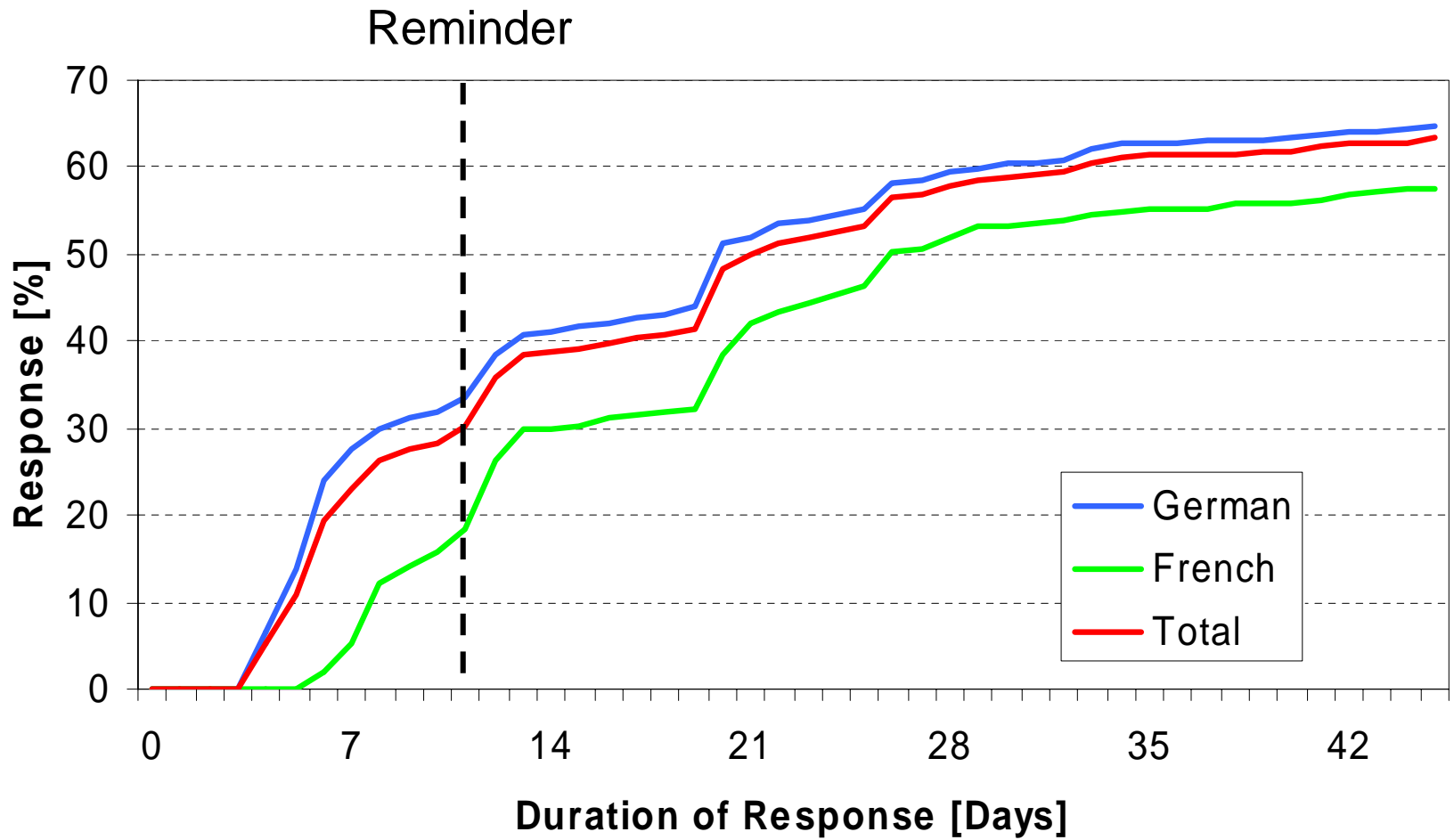**Dann** benötigen Sie für die **Route B 75 Minuten.**

Aber das wissen Sie ja erst, wenn Sie bereits unterwegs sind. Welche Route wählen Sie für diesen täglichen Weg?

Antwort:

Ich wähle Route A.   ❏

Ich wähle Route B.   ❏

Response

Availability of modes [%]

Car availability:	IVT '01	KEP '00	MZ '94
always	55.2	58.3	75.0
sometimes	29.0	23.3	19.0
never	15.8	18.4	6.0

PT-Season ticket ownership:			
no season ticket	43.5	49.5	45.5
only HT/d-t/m-p	38.6	30.2	32.1
GA / AG	7.8	6.7	4.2
HT/d-t/m-p + season	5.6	7.4	10.9
only season ticket	3.6	5.4	6.7
other	0.3	0.8	0.6

Question 1 - Buffering Time [min]

Car	min	max	$\bar{x}$	s
Business related	0	120	22.26	25.90
Private business	0	160	20.88	25.22
Shopping	0	120	24.41	25.01
Sunday excursion	0	120	22.27	24.57

Rail				
Business related	0	190	21.00	27.91
Private business	0	240	20.28	30.07
Shopping	0	180	21.69	28.60
Sunday excursion	0	120	20.20	24.72

Question 5 - Value of mode attributes

Important properties:

     All purposes: Safety
     Work, visit, sport: Punctuality

Secondary properties:

     Price
     Environment
     Speed

The Logit Model

Basic approach: Utility U_{jq} of the alternative j for a person q:

$$U_{jq} = V_{jq} + \varepsilon_{jq}$$

with:

V_{jq}	Value of the objective utility
ε_{jq}	random error

$$V_{jq} = \alpha_j + \sum \beta_{kj} x_{kjq}$$

α_j	Constant
x_{kjq}	Attribute of the choice variable k (individual, situational, alternative specific)

Overview of the Modelseries [LL-Functions]

	Route choice monetary	Route choice time rel.	Route choice combined	Mode choice
1. Null Model L(0)	-3.470	-950	-8.840	-1.370
2. Constant only L(C)	-3.410	-940	-4.350	-1.270
2. + Reliability-var's.	-2.560	-720	-3.280	-1.200
2. + Reliability-var's ($\overline{x}$,s)	-2.940			-1.260
2. + Reliability-var's (squared)	-2.545	-695	-3.240	-1.140
+ Socio-demographics	-2.530	-690	-3.225	-1.120

The combined final model [β-Parameter]

Variable	Reliable Route	Unreliable Route
Travel time	-0.262	-0.262
Travel time^2	0.017	0.017
Probability of delay		-3.125
Probability of delay^2		0.626
Duration of delay		0.012
Duration of delay^2		-0.008
Additonal tax / toll	-0.117	
Additonal tax / toll^2	0.008	
Laguage	0.207	
Trip purpose work	-0.071	

Value of reliability
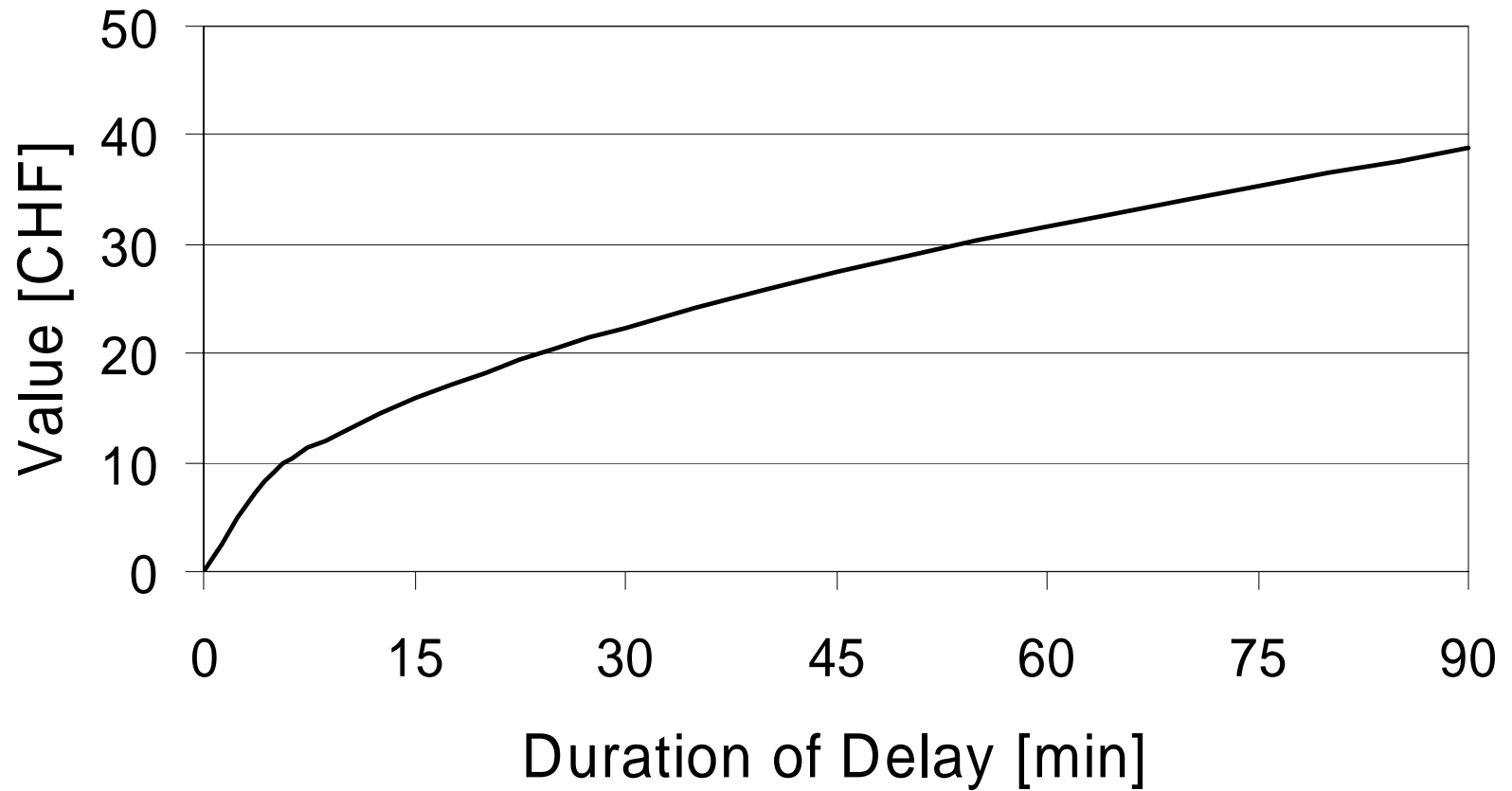
Outlook

Further work:
- Departure time choice
- Consideration of RP-Data

Validation of the VoR

Recommendation for implementation of the results
- in demand simulation
- in supply modelling